"USE" IN THE LITERATURE OF LIBRARY AND INFORMATION SCIENCE: A CONCEPT ANALYSIS AND TYPOLOGY

by

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ABSTRACT

The “use” of information and library resources and services is frequently presented in Library and Information Science (LIS) literature as a primitive concept: an idea so fundamental to the theoretical framework at hand as to be indefinable—even when presented as an operational variable. In fact, an examination of the LIS literature reveals that *use* is a multi-dimensional concept that requires clarification for effective empirical examination.

This dissertation employs the *Evolutionary Concept Analysis* (ECA) method developed by nursing scholar Beth L. Rodgers (2000) to consider representations of *use* in a 200-item sample of LIS journal literature. ECA investigates the development of concepts by examining the attributes and characteristics of a concept as represented within a specific discipline (e.g., *empathy* as a concept in nursing) and within specific chronological, disciplinary, and theoretical contexts.

Rather than to provide “the” definition of *use*, the purpose of this study is to illuminate the difficulties presented by the lack of clarity surrounding the *use* concept in LIS literature and practice. This process has produced a *Typology of Use* that can serve as a springboard to future empirical and theoretical projects in this area.

CHAPTER 1

INTRODUCTION AND STATEMENT OF THE PROBLEM

> The overlapping meanings and ambiguities associated with "use" make vigorous definition and limitation essential in the research situation. (Roberts, 1975, p. 313)

The American Society for Information Science and Technology's (ASIS&T) 2002 Annual Meeting featured a panel discussion entitled "What's the Use? Extending and Revising Notions of Use and Users in Information Behavior Research." According to the program announcement, the need for this discussion was made clear at ASIS&T's previous conference when "questions were raised about how researchers of information behavior are defining such key concepts as information 'users' and 'use' in their work." The discussion also demonstrated that "researchers are defining these concepts in different ways and…new terms…are being used to describe related phenomena." The description also mentions that the concepts of "use" and "user" as phenomena for empirical examination had not been explored thoroughly since 1977 (ASIST, 2002, p. 449).

Practitioners struggle with the meaning of use as well. A 1992 brainstorming session of the American Library Association's Reference and Adult Services Division (RASD, now called the Reference and User Services Association, or RUSA) Research and Statistics Committee identified "Collection Use" as one of the main areas in need of research. Specific questions identified included "Who uses the reference collection and

what sources do they use?" and "How do patrons use reference collections?" (Childers, 1997, p. 156).

Use[1] is a very common concept in librarianship, library science, information science, and library and information science (LIS) research and practice. A search of the *Library, Information, Science, and Technology Abstracts* (LISTA) database for entries with "use" in the article title retrieves over 5,000 results. A cursory scan of the first several results reveals several articles that are highly relevant: "Things We Use in Libraries and When They Were Invented" (*American Libraries*, 2006), "The Decline of Print: Ten Years of Print Serial Use in a Small Academic Medical Library" (Rosati, 2006), "The Effect of Use and Access on Citations" (Kurtz, Eichhorn, and Accomazzi, 2005). In addition to numerical ubiquity, the journals of origin of these articles—*American Libraries, Acquisitions Librarian,* and *Information Processing & Management*, respectively—demonstrate that use is a concept of interest in scholarly and practitioner-oriented periodicals

Frequency of appearance in LIS journal literature has not translated to clarity of definition in the case of the use concept, however. On the contrary, use is infrequently defined either conceptually or operationally. More often, use is treated as a primitive concept in library research: an indefinable term so basic to the theoretical framework at hand that the author's meaning need not be explained, nominally or operationally.

This dissertation examines the construction of the use concept in the professional and scholarly literature of librarianship, library science, information science, and library and information science from 1876-2007. The purpose of the inquiry was to examine the ways in which use is applied in the literature of LIS in order to deter-mine if *use* is, in

[1] See page 49 for a discussion of this paper's terminology.

fact, a concept with a universally understood meaning, or if it has been applied and understood in LIS in far too many ways to be treated as an irreducible concept.

Understanding *Use*

What *does* it mean to use a library or its information resources? Does one use the library merely by walking through the door, or must one remove a book from a shelf in order for use to take place? If these acts are not sufficiently significant to constitute occasions of use, will checking out a book suffice? If so, must the book be read? If the book must be read to constitute use, what effect must this reading have? Does use only occur if the information in the book is proven to have been applied by the patron in the form of a citation? The electronic age further complicates the question of the nature of use: how does one make use of the library without entering it? If remote access to a database through a library's subscription seems to be an obvious instance of use to a librarian, is it equally obvious to the patron that she has used a library resource without leaving her home, or for patrons, does library use still mean visiting the physical library?

In particular, the lack of understanding of use becomes significantly more troublesome in the current environment of assessment and accountability facing libraries. As those responsible for providing funding to libraries become less focused on statistical measures of performance success, turning their attention instead to more qualitative approaches such as outcomes-based assessment, the need for a common language for discussing the contributions of libraries to their communities becomes all the more critical. Meanwhile, library services continue to change and diversify as they expand into the electronic environment. This shift simultaneously multiplies the numbers and types of

uses of the library and information resources and removes many of these use actions from the physical space of the library, making it more difficult for librarians, researchers, and administrators to observe the ways in which materials are being utilized. As a result, researchers investigating remote library use frequently must make do with data about the number and duration of log-ons to specific databases. This approach to measuring use is arguably little different from the virtual equivalent of door counts and circulation statistics, and contributes little to our understanding of the role of the library and information sources in the life of the user.

How best, then, to understand use in a meaningful fashion? The research presented here is an exploration of the use concept as it is represented through the literature of LIS. Rather than presenting "the" definition of *use*, the purpose of this project is unpacking the dimensions and attributes of the use concept to provide a conceptual framework within which study and understanding of library and information resource use by users can be improved.

CHAPTER 2

CONCEPTS:
THEIR SIGNIFICANCE IN THE SOCIAL SCIENCES
AND METHODS FOR ANALYSIS

Because the goal of this project is to clarify reasons for and meaning of applications of the *use* concept in the literature of LIS, a method for doing so was called for. The centrality of "the concept of the concept" to social science has resulted in a great deal of discussion of the nature of concepts as well as methods for analyzing the empirical and theoretical application of concepts in the social sciences. An understanding of the role played by concepts in the social sciences in general and as well as in LIS specifically will contribute to an understanding of the relevance of this project. This section examines the importance of concepts in the social sciences, paying special attention to the methods researchers employ to clarify and unpack concepts' meaning and significance.

Ironically, "concept" is itself, an unclear term that is applied in disparate settings and with decidedly different meanings. It will be helpful to describe some of the dominant thinking about the meaning of "concept" and to explain how the term will be used in this dissertation.

Conceptualizing *Concept*

The Oxford English Dictionary identifies early English use of the term in the mid-16th Century, as "a thing conceived…in 'formal or set form'" (online). Later use of the term indicates that it came to refer to not only a formal representation of an idea, but of a theme within a larger type, as in discussions of product "concepts" in advertising and marketing. In modern English, *concept* is a term for an understanding of an idea or identification of a larger category to which isolated instances belong.

In addition to its meaning in everyday English, concept is a term with more specific meanings within certain disciplinary contexts, specifically philosophy, psychology, linguistics, and epistemology. Heath (1967) describes concept as "one of the oldest terms in the philosophical vocabulary, and one of the most equivocal" (p. 177). Heath presents the idea that the meaning of the term concept is dependent upon the context in which it is used: in some instances, it may describe "a cognitive relation of some kind between a subject and an object," i.e., one's being said to "have" the concept of a particular phenomenon. In others, concept is "the exercise of a function" (p. 178). Concepts can also be considered to have a *compositional* quality, meaning that they possess the ability to combine individual concepts to form more complex concepts (Rey, 1998).

Wittgenstein's (1953) view of concepts reflects skepticism about the validity of the mental representation model of human cognition, largely because it is impossible to illustrate a mental representation of a concept without calling upon *another* concept or idea. This dismissal of the representative idea of concepts is intrinsic to the *Abilities* view: that a concept refers to a particular set of abilities of a cognitive agent.

The Classical View of Concepts

The Classical View of concepts, so called due to its enumeration by Aristotle during what is now considered the "classical" period of history, requires a concept to have a set of attributes that must be present in order for an instance of the concept to be recognized. By assessing how closely an idea meets the necessary attributes of a concept or concepts within a larger category, it is possible to identify instances of a concept, closely related concepts, and examples of ideas that possess many, but not all, of the attributes of the concept in question, thereby presenting an illustration of what a concept *is not*. Because this approach to concepts identifies them as units that can be differentiated and delineated, it is referred to as an *entity* view of concepts: the underlying position being that concepts are not unlike the objects they represent in some cases (Rodgers, 1987, p. 200).

Though Laurence and Margolis (2000) praise the contributions of the Classical View, they also observe that its application presents several theoretical and operational difficulties, the most significant of which is that "for most concepts, there simply aren't any definitions" (p. 14).

Concepts in Cognitive Theory

As Margolis reports, empirical research in cognitive processes has demonstrated weaknesses in the Classical View of Concepts; specifically, it has been demonstrated that certain instances of a concept are judged to be "more typical" examples of that concept than are others. For example, while we may acknowledge that the ostrich is, in fact, an example of the concept of *bird*, the ostrich is flightless. Certainly if we were to enumerate

the typical attributes of an example of the concept of bird, the ability to fly would be high on the list. Does that mean that the ostrich, because it does not satisfy that attribute of "bird-ness" is not a bird? Certainly not. The Classical View of concepts is unable to address this situation. According to Margolis, while the Classical View has certainly enjoyed longevity, it has resulted in very few successful definitional analyses.

The *Oxford Dictionary of Psychology* defines concept as "a mental representation, idea, or thought corresponding to a specific entity or class of entities, or the defining or prototypical features of the entity or class, which may be either concrete or abstract" (online). "According to some authorities, to qualify as a concept the men-tal process must be conscious: young children do not have concepts of *noun* or *verb* although their linguistic behaviour shows that they understand these concepts and can discriminate between them" (Ibid, online). This is the view of concepts as presented in the *Representational Theory of the Mind* (RTM) in which mental processes are believed to reflect an internal system of symbolic and relational representation of ideas.

One of the main contributions of cognitive science to general understanding of the meaning and significance of concepts is the strain of inquiry into how we form concepts and identify instances or examples of a concept. This contribution is especially significant in the area of explaining the mental processes involved in the creation of categories. Specifically, scholars like Murphy and Medin (1985) have identified the deficiencies of certain approaches in explaining the phenomena subsumed by an umbrella concept, such as a tendency to consider *similarity* synonymous with *coherence*. Murphy and Medin argue that the appearance of similarity is not a sufficient umbrella for a collection of phenomena without some understanding of the theoretical basis of this similarity, saying

that it is possible for two instances of a concept to be dissimilar but coherent examples of instances of a concept with proper theoretical explanation. Other cognitive scholars beg to differ, asserting that similarity is a by-product of conceptual coherence. Instances of a coherent concept *seem* similar because the theoretical basis for their inclusion *makes them appear* similar (p. 291). For example, in that barber poles, zebras, and sailor shirts are similar only in the fact that that they are striped, they form examples of a coherent concept. Of course, it is difficult to think of another criterion that might serve as an umbrella for these three objects.

Cognitive scientists have also pointed out that in order to expedite the identification of instances of a concept or phenomenon, humans assign different levels of importance or significance to individual attributes of a concept. Rosch and Mervis (1975) called this idea *prototypicality* and determined that the cognitive processes associated with assigning the typicality of an example of a concept had to do with the strength of its resemblance to other instances within the family in question. Rosch and Mervis listed representative examples of six categories, such as “fruit,” “bird,” and “furniture” and asked a group of respondents to rank them in order of typicality of that category. A second group of respondents was then asked to list the attributes of each of the examples. When the authors then compared the ranked lists with the lists of attributes, they found that the items considered “most typical” by the first group had the largest number of shared attributes as identified by the second group. In their study, the most typical examples of “fruit,” such as oranges, apples, and bananas, shared sixteen attributes, such as “sweetness”. The least typical: coconut, tomato, and olive, shared none.

The Prototype view of concepts is an attempt to address the perceived failings of the Classical View. In the Prototype approach, an instance of a concept is identified by comparison to a "typical" example of that concept. Because this approach requires presentation of an example of the concept, it is also referred to as a *dispositional* view of concepts (Rodgers, 1987, p. 201). For example, if an ostrich's bird-ness were judged against a bird prototype, such as a robin, in spite of its lack of several attributes of bird-ness, the ostrich might still be judged a valid example of the bird concept. However, the Prototype approach has been criticized for a perceived weakness in addressing concepts that are more complex. At issue as well is the idea of typicality. If an ostrich, which already lacks the bird attributes of flight, migration, and song were to have its feathers removed, would it still be an example of the bird concept? Although we may feel certain that a featherless ostrich is still a bird, this may be the characteristic of bird-ness that provides the tipping point under the proto-type view.

The Semantic View of Concepts

While cognitive scientists consider a concept to be a representation created within the context of the human mind, semanticists approach "concept" as an external; a collection of characteristics. Sartori (1984) presents a view of concepts that seems to directly contradict that of cognitive science: although words are *polysemic*, possessing multiple meanings, a word's appropriateness within a specific context specifies its meaning in that instance. Rather than words acquiring "their meaning *via* the sentences in which they are placed…it is the case that the meaning of a word is specified *by* the sentence in which it is placed" (emphasis mine) (p. 17). In other words, semanticists

believe that employment of specific words within a specific context is deliberate; the representative quality of language leads us to select specific words in order to present specific meaning. In other words, as Wittgenstein (1953) famously said, “the meaning of the word is its use” (p. 512).

This view is reflected in the *Sapir-Whorf Hypothesis*, developed by linguist Edward K. Sapir and his student Benjamin Whorf (1956). Sapir had been a student of anthropologist and linguist Franz Boas, whose views on the relationship between language and culture had a strong influence on Sapir’s thinking. Boas’ belief was that languages, reflecting their respective cultures, categorize and discuss experience differently. Boas’ most famous illustration of the relationship between culture and language was drawn from his fieldwork: the (now known to be apocryphal) multitude of individual words for *snow* in Inuit language[2]. Boas stated that while English has few words for the different types of snow, and generally modifies the word snow with adverbs and adjectives in order to describe variations in the characteristics of different types of snow, i.e., “drifting snow,” or “wet snow,” Inuits have individual words to convey the variations in types of snow they experience. Boas hypothesized that the importance of snow in everyday Inuit life led the culture to develop very specific language to describe its differing qualities. Boas believed that language incidents such as this demonstrated the ways in which the concerns of a culture shape the structure of their language.

[2] Scholars later determined the existence of different, individual Inuit words for *snow* to be the result of the polysynthetic structure of that language. Unlike English, which frequently modifies words with adjectives and adverbs that are separate words, the Inuit language described by Boas allows the creation of new words through the combination of modifiers, prefixes and suffixes (Pullum, 1991, pp. 161-5).

The Sapir-Whorf, or *Linguistic Relativity* Hypothesis, takes this idea in the opposite direction: rather than *reflecting* the cultures with which they are associated, variations among languages' classificatory functions and approaches *shape* the cultures to which they are connected. Because language structure directly affects our ability to classify experience, the classificatory approach of any given language shapes the thought processes of its speakers (Lucy, 1992, p.31).

Concepts in Empirical Social Science

Hempel (1952) describes concept formation and theory formation for empirical research in the social sciences as "so closely interrelated as to constitute virtually two different aspects of the same procedure" (p. 2). *Nominal definition* is the stipulation that an identified element or concept in a theory (the *definiendum*) is to be considered synonymous with an identified *definiens*, the meaning of which has already been established. A named concept, according to Hempel, can be understood to be the nominal definition of a non-linguistic entity such as a collection of attributes. By contrast, a *real* definition lays out the essential elements of an instance of a concept. Establishing a real definition is problematic, according to Hempel, because it can be impossible to establish empirically all necessary criteria for satisfaction of an example of a concept.

An *empirical* definition, on the other hand, provides a visual representation of the necessary characteristics of a concept's real definition. For example, while it may be difficult to provide a real definition for the phrase *living organism*, it is possible to create a formulaic representation of a living organism without establishing the specific qualities necessary. As an example, Hempel provides Hutchinson's *Model of Life* (*L*): $Lx=Dx \bullet Mx$

• *Rx,* wherein *D* stands for a *discrete boundary of physical mass*, *M* for *metabolic capacity,* and *R* for *reproductive ability* (p. 7). Establishing an empirical definition of a concept does not require establishing the parameters for each of these variables. Hempel rightly points out that establishing "the" meaning of a term requires that it have only one meaning or application for all those who use it, throughout time.

As identified by Morse (2004), concepts in the research context are employed at differing levels of abstraction. *Low-level* concepts are the least abstract, and tend to be limited in scope. *Mid-level* concepts are more abstract than low-level concepts, but still tied to a particular phenomenon. Low- and Mid-level concepts may be covered by *High-level* concepts, which, in turn are encompassed by *Horizontal* concepts. Horizontal concepts are highly abstract and may incorporate any number of lower-level concepts. *Paradigmatic* concepts operate at an even higher level of abstraction; these concepts are subjective and dependent on the experience of the individual researcher.

The "Theory Theory" of Concepts

The *theory* approach to concepts draws an analogy between the relationships among concepts and the elements of scientific theory. In the theory approach, a concept's meaning is dependent upon the context in which it is used. For example, if a family were to go into a pet store and inquire about purchasing a bird to keep in their home, one would consider the ostrich's large size and ill temperament and exclude it from eligibility for the bird category in the context of "family pet". Although the theory approach's recognition of the importance of context in meaning is its main strength, it might also be described as its main failing. If the meaning of a concept is dependent upon its context in both the

situation in which it is used and the conceptual structures of the person by whom it is used, it may not be possible to achieve consensus regarding full understanding of a concept and empirically establish its meaning (Margolis, 2006, unpaged).

Concepts are frequently described as the "building blocks of theory" (Strauss & Corbin, 1998, p. 101). Paley (1996) considers this view directly contradictory to the true relationship between concepts and theories. Rather than building blocks, concepts are "niches" within a theoretical framework (p. 577). In Paley's view, the meaning of a concept shifts depending upon the theory in which it is situated. From this perspective, "information," for example, can be a message, a process, a tool, a fact, something that "reduces uncertainty," and so on, depending upon the disciplinary or theoretical context.

Abstract and Concrete Concepts

One of the difficulties presented by concepts in theory and empirical research is the level of abstractness presented. Reynolds (1971) describes *abstract* concepts as being "completely independent of a specific time or place" (p. 49). *Concrete* concepts, on the other hand, are more specific, making them more appropriate for use in empirical research. For example, *morning* is an abstract concept. In most casual conversations about commute times, one need not be more specific than to refer to the speed with which morning traffic moves. However, if one were to propose studying the difference in the number of minutes required to drive between point (a) and point (b) during the morning rush hour, a more concrete concept of *morning*, such as the *hours between 7and 9 a.m., Monday through Friday* is necessary.

The nature of both Abstract and Concrete Concepts differ, however, from that of *Theoretical* Concepts. The theoretical definition of a concept is more abstract and broad than its *operational* definition, or the more concrete definition that establishes parameters and procedures for its empirical investigation. Difficulty arises when only one of these definitions is provided in an empirical study. If only the empirical or concrete definition of a concept is provided, it may be difficult to determine the larger significance of the concept in question; if the theoretical definition of a concept is presented without explanation of how it will be operationalized, it may be impossible to grasp the methods by which the concept is being evaluated.

Reasons for Clarifying Concepts

Why does conceptual ambiguity matter? According to Hempel (1956), "most presentations of science fail to state explicitly just what terms are taken to be defined and what others function as primitives." This is especially problematic, given that "the primitive terms of one presentation may be among the defined ones of another" and each study may measure the concept differently (p. 23). In other words, the definition of an unclear empirical concept may include other, equally unclear concepts.

In some instances, such as the case of the concept of *use* in LIS, habitually neglecting to provide definitions for concepts in the research context may be due to the commonplace nature of the term *outside* scientific measurement and communication. A term as common as *use* is likely to be understood by English speakers from a very young age, while the definition of a more obscure concept, such as *citation*, may be required more frequently and be more readily available.

According to nursing scholar Catherine Norris (1982), it can be extremely difficult to create empirical measures of phenomena that are common in everyday experience. "Terms like hunger, thirst, and fatigue are hard to define precisely for use in scientific work. Constant use of such terms in both social and professional contexts makes it difficult to do the ongoing monitoring that ensures exactness" (p. 26-7). In spite of this difficulty, Norris believes that researchers who fail to examine the differing applications of such concepts do so at their peril:

> Nurses who use common-sense definitions without elevating them to a scientific level face two problems: (1) the concept may be so widely used and so broadly defined that it eludes definition. (2) Each person trying to cope with broad definitions uses his or her personal experience to give it meaning. Every common-sense concept ends up having subjective connotations as well as imprecise, general meaning. This traps…the researcher into the same position as the layperson (p. 27).

Norris' term for the process of unpacking the meanings and attributes of an ambiguous concept is *clarification*. Ideally, clarification should enable researchers to stipulate the definition of the concept being used in the research in question, e.g., "for the purposes of this study, a book "use" will be measured as a single circulation of a book." *Rational reconstruction* is the process that allows stipulated definitions associated with the concept in question to be refined through further empirical inquiry (p. 28-9).

Morse (2004) identifies several reasons for clarifying concepts for research:

- To facilitate the synthesis of data,
- To assist in the recognition of patterns within data
- To assist in the recognition or identification of variations within data
- To facilitate the identification of new instances of the concept under consideration
- To expand examination of the concept in question beyond the initial context in which it has appeared
- To facilitate generalization of the concept
- To connect the concept to other concepts
- To facilitate the development of theory related to the concept in question (p. 1391-2).

Concepts and Empiricism in Library and Information Science (LIS)

> In scientific discourse, theoretical concepts are not true or false elements or glimpses of some element of reality; rather, they are constructions designed to do a job the best possible way. Different conceptions of fundamental terms like *information* are thus more or less fruitful, depending on the theories (and in the end, the practical actions) they are expected to support.
>
> (Capurro & Hjørland, 2004, unpaged)

The first International Conference on Conceptions of Library and Information Science (CoLIS) was held in Tampere, Finland, in 1991. Subsequently, five more conferences have been held, the main objective for which is to scrutinize "the underlying methodological ideas that advise the research efforts within the LIS discipline" (Byström, Nordlie, & Pharo, 2007, unpaged). Specifically, the original conference's organizers saw a need to strengthen the research agenda of LIS scholars by fostering discussion of the fundamental issues of LIS. Vakkari (1991) said, "We need conceptual analysis of the discipline in order to outline its central articulations and basic concepts, as well as the relations between them" in order to provide a theoretical framework for the discipline (p. 3). Such a framework, according to Vakkari, creates a ripple effect throughout the research of a discipline, influencing decisions about the nature of phenomena to be studied and the methods by which to study them.

Vakkari found that conceptual imprecision was also a problem in several submissions for the 1996 International Conference on Research in Information Needs, Seeking and Use in Different Contexts. According to Vakkari, one of the major problems with submissions for the conference was "insufficient definition of basic concepts and especially their relations within a unit theory" (1996, p. 459). Vakkari found "the use of

the central concepts, like information, knowledge, information need, seeking, and use as primitive concepts" requiring no further definition was especially notable (p. 460).

McKechnie and Pettigrew's (2001) content analysis of 1,160 articles from six LIS research journals found that only 34.1% included any mention of theory (p. 62). This number, though an improvement over the findings of earlier, similar studies (Peritz, 1980; Feehan, Gragg, Havener, & Kester, 1987; Jarvelin & Vakkari, 1990; Julien, 1996; Julien & Duggan, 2000), demonstrates the impracticality of relying on the theoretical framework of a study in the LIS literature to clarify the meaning of concepts presented in the study. Therefore, clarifying concepts as they are presented in scholarly literature may also clarify the ad hoc theoretical framework within which the study is situated. Jarvelin and Vakkari (1990) said that the lack of definition of basic concepts in LIS research as problematic and regard "the scarcity of conceptual analysis" as a "grave deficiency" in LIS research and suggest that "conceptual analysis…should be more frequent in order to clarify the unhoed rows in concepts of LIS" (p. 415).

LIS scholars and practitioners' discussion of *use* in the varying contexts of casual discussion, formal communication, and empirical study makes improving our understanding of the term essential. Roberts' (1975) *ASLIB Proceedings* piece makes this clear:

> Faced with terminological imprecision, social scientists have devoted considerable efforts to the solving of definitional problems and asking a 'large number of meaning questions.' This type of question also abounds in information science—what is need? What is use? What is benefit? Unfortunately, in information science, less effort has been expended upon the formulation of acceptable definitions of fundamental concepts. (p. 308).

CHAPTER 3

METHODOLOGICAL APPROACHES TO CLARIFYING CONCEPTS

Improving and augmenting understanding of the *use* concept in Library and Information Science requires the application of a specific methodological approach. Unfortunately, although as discussed, the issue of conceptual ambiguity in LIS theory is an oft-lamented and oft-recognized problem, the LIS research tradition lacks well-established methods for addressing conceptual ambiguity. Several fundamental concepts in the LIS universe have been examined using a variety of methods, but none seemed exactly appropriate to achieve the specific goal intended for this project. However, each of the methods presented here has informed the approach ultimately selected for investigating the use concept.

Treatise Approach

While investigating the meaning of a discipline's significant concepts is a common activity in LIS and other social sciences, the approach taken to individual analyses is not frequently identified. Some discussions of concepts in LIS fall under the description of *treatise*, as defined by Saracevic (1970):

1. A systematic, historic, and chronological exposé of a subject
2. A correlation between various trends, viewpoints, and works; and
3. A critical synthesis of what is known, with suggestions as to the possible fruitful directions for future work (p. 10).

The Oxford English Dictionary defines treatise as “a book or writing which treats of some particular subject; commonly one containing a formal or methodical discussion or exposition of the principles of the subject” (*OED Online*, unpaged). Delineation of the actual methods employed in the construction of a treatise is not readily available, however, making it an inappropriate approach for this project.

Explication Approach

A similar, but less common approach to unpacking the meaning of a concept is *explication*. Explication is defined by the OED as “the process of developing or bringing out what is implicitly contained in a notion, proposition, principle, etc.; the result of this process. The action or process of removing difficulty or obscurity from, or making clear the meaning of (a word, statement, symbol, etc.) Also, that which affects this; an explanation, interpretation” (*OED Online*, unpaged). Although originally developed as an approach to analyzing literature, the method of explication was adapted by social scientists to illuminate the meaning of concepts, particularly for theory development.

The most comprehensive discussion of explication as a method in the communication studies was written by Chaffee (1991), who stated that “what sets the scientist apart is the formal conceptualization of processes that are not obvious, coupled with a determination to bring them into view in an equally formal manner” (p. 3). Concepts, he wrote, “establish the linkage between communication perceptions, which everyone has, and theories, which communication scientists build and test” (p. 1). Explication, according to Chaffee, “consists of the thinking that relates theory with

research" (p. 4) and "can strengthen the ties among theory, observation, and research" (p. 2). As described by Chaffee, explication follows these steps:

1. Preliminary identification of the concept, including:
2. Literature review
    a. Evaluation of definitions of concept in the literature
    b. Assessment of operationalizations of concept in the literature
3. Development of an empirical description based on literature review
4. Establishment of Nominal, Conceptual/Theoretical, and Empirical definitions of Concept
5. Review of the collective concept definitions
6. Modification of the concept definition (Hallahan, 2004, unpaged).

Although similar to the process of writing a treatise on a topic, concept explication differs in that it is an iterative process that "embraces both the conceptual world and the real world, crossing those lines repeatedly as the student attempts to improve conceptualization through research" (Chaffee, 1992, p.5).

Dumont and Wilson (1967) advocate the use of explication for ambiguous concepts in sociology. The authors state that sociology lacks explicit theories; therefore, theoretical concepts in sociology lack both *epistemic significance* (described by the authors as empirically established, observable connections between the elements of a theory) and *constitutive significance* (proven relevance of the concept to the theory, the demonstrated relationship of the concept to others in the theory.) Rather, most concepts in sociology are isolated abstract concepts: ambiguous and open in meaning. The authors go on to say that although abstraction is necessary in theory to some degree—all theoretical concepts represent an abstraction from everyday phenomena—too often, scientists fail to distinguish legitimate abstraction of this type from abstraction arrived at as a result of inference or "intuition" (p. 989-90).

During the concept explication process, it is common to develop a preliminary definition of a concept and conduct an empirical assessment of the definition. In other examples of explication, the empirical test of the concept definition is not part of the explication. Concept explication also has, as its goal, establishment of "the" definition for a term. At their best, explications of theoretical concepts are elegant and useful for the development and testing of theory.

Koselleck's Conceptual History Approach

Historian and theorist Reinhart Koselleck's (2002) idea of the importance of concepts in the construction of history mirrors the work of Sapir and Whorf. His *History of Concepts* (or *Begriffsgeschichte*) approach advocates for examining the meaning of a historically significant concept, such as *liberty* or *equality*, paying attention to its development in different chronological and cultural scenarios. In Koselleck's view, concepts are constructed within a triad: the word, which provides a linguistic designation for the concept, such as "apple"; the meaning, or essence, of the concept itself, such as the dictionary definition of "apple"; and an object or fact that is representative of the concept, such as a physical apple. According to Andersen (2003), in Koselleck's view, it is within this triad that history is constructed: "words become concepts through the condensation of a wide range of social and political meanings" (p. 37). Because of the high concentration of meaning associated with a single concept, the individual or essential meaning becomes ambiguous, leading to the possibility of it becoming a "semantic battlefield" (Ibid, p. 37). It is in the struggle to disambiguate such concepts as *equality*, *freedom*, and

representation that history about the social movements associated with achieving such concepts is told.

In this example, provided by Andersen, “equality initially was taken to mean equality between the sexes. Gradually, it became identified with equality in the job market and eventually the conceptual field was extended to society more broadly so that, today, the conflict is about the equalization of equality between the sexes with equality among ethnic minorities or between disabled and able-bodied people” (Ibid, p. 37). Andersen indicates that precedents set by the understanding of equality as something to be negotiated between men and women precipitated future incarnations of the concept as applying to a goal for ethnic and religious groups, gays and lesbians, and other individuals who might have been perceived as having less than equal status.

Discourse Analysis Approach

Discourse Analysis (DA) is the “study of the way in which an object or idea… is taken up by various institutions and epistemological positions” (Finlay, 1987, p. 2). DA frames its analysis within the larger “text” surrounding a concept rather than “minute linguistic entities” (Budd & Raber, 1996, p. 217). In discourse analysis, the researcher interrogates individual texts within the discourse in order to answer questions both about the individual text itself, what Fairclough (2003) refers to as “internal” elements and its relationship to other texts (external elements) within the same discourse (p. 38). In LIS, discourse analyses have been performed on textual units as diverse as library posters (Thomas, 2001), transcripts of interactions between patrons and reference librarians

(Chelton, 1997), and discussion of the meaning of *information* (Derr, 1985; Frohmann, 1992; Budd & Raber, 1996).

Although discourse analysis is frequently discussed as if it were a well-defined theoretical framework and method, it is actually a broad spectrum of inquiry including approaches based in linguistics, Marxism, and critical theory, among others. Much of discourse analysis in the social sciences is built upon the work of Michel Foucault, specifically his work in the *Archaeology of Knowledge* (1972) in which he identified a *discursive formation* as a commonality within a collection of concepts, themes, or statements. Foucault considered discourses to have real power to shape perception of reality.

Ernesto Laclau and Chantal Mouffe's *Discourse Theory (DT)* also figures prominently in the discourse analysis tradition and follows a poststructuralist understanding of language, specifically, that the meanings of elements of language (Saussure's *signs*) are never and cannot be fixed. Ongoing language use requires shifts in meaning, and language use "is a social phenomenon: it is through conventions, negotiations and conflicts in social contexts that structures of meaning are fixed and challenged" (Phillips & Jørgensen, 2002, p. 25). According to Laclau and Mouffe (2001), discourses are formed around *nodal points*, "privileged sign[s] around which the other signs are ordered," such as, in LIS, *library* or *information* (Phillips & Jørgensen, 2002, p. 26). According to Laclau and Mouffe, we still attempt to fix the meanings of signs in spite of the impossibility of doing so. Discourse Theory states that it is in these attempts to set the meaning of a sign within a discourse that analysis of the discourse can take place.

Although several LIS researchers have either applied the discourse analysis methodology to specific LIS topics (Frohmann, 1992; Talja, 1999; Radford, 1993) or have discussed the general suitability of DA to questions of interest for LIS (Budd & Raber, 1996; Frohmann, 1994), it is difficult to find much discussion of the specific methods applied in discourse analysis. One of the few studies to provide a tangible basis for examining the texts in question is Hedemark, et al.'s (2002) analysis of the discursive construction of *user* in a selection of Swedish library journals. To assist them in their analysis, the authors developed a reading scheme based on Laclau and Mouffe's Discourse Theory (unpaged):

Table 1.

Hedemark, et al.'s Reading Scheme

1: Designations User designations found in the articles	1: Categories Meanings attributed to the various user designations
3: Themes Themes and contexts within which users are being discussed and how it is done	4: Discourses Conceptions and meanings as a whole

Prior Analyses of Library and Information Science-Related Concepts

While it is true that concepts are frequently presented in the LIS literature accompanied by little exploration of meaning or significance, attempts have consistently been made to explore some of the concepts that are fundamental to LIS theory and practice. It is helpful to consider the approaches and conclusions of some of these, as doing so may provide guidance in the discussion of the use concept.

Information

Despite, or perhaps because of, the lack of an agreed-upon definition of *Information*, it remains one of LIS' most-considered terms. Zhang Yuexiao (1988) outlined differing definitions of information and the disciplinary traditions associated with each, including library science, communication, mathematics, and philosophy. From this, Zhang developed a visual representation of the dimensions of information and the network of dimensions among disciplines.

Discourse analysis is a popular approach to examining treatments of information. Malone and Elichirigoity (2003) undertook an analysis of the discourse surrounding the addition of information as a category in the new North American Industry Classification Systems (NAICS), concluding that the "information" classification was constructed to actualize the concept of the *information economy* and solidify the status of information as a commodity. Radford (1993) also took a discourse analysis approach, applying Foucault's perspectives on power and status in his examination of the relationship between communication and information. Derr (1985) chose to analyze the discussion of information in "ordinary discourse," specifically, conversational utterances such as "do you have information about the whereabouts of John Smith?" and "the same information can be found in the newspaper." Through his analysis, Derr identified what he sees as characteristics of information, which he describes as an abstract phenomenon.

Buckland's (1991) examination of discussion of the concept of information led him to identify three distinct representations of information: *process*, *knowledge*, and *thing*, while Capurro and Hjørland (2003) contributed an extensive "state-of-the-art" discussion of the concept of information to the *Annual Review of Information Science and*

Technology. In addition to examining the ways information has been defined and used in LIS literature, the authors consider the importance of clarifying terminology and concepts for theoretical applications as well as the pitfalls of applying certain approaches to the definition process.

The relationship between data, information, and knowledge is often addressed in discussions of the meaning of information. Meadow and Yuan (1997) undertook an examination of information and contingent terms in response to their own frustration about the diversity of definitions they encountered during research about the impact of information on socio-economic development. Through their analysis, the authors developed a "common basis for referring to key concepts" rather than a set definition for information and related terms, such as data and knowledge (p. 697).

Case (2002) reviewed discussions of information and typologies of the concept in the literature as well as the more general issues surrounding concept definition and eventually, Case settled on applying the term broadly, "encompassing instances that would be considered unusual by some scholars." Bates (2005) posited multiple definitions of information, data, and knowledge, to fit physical, biological, and social theories of human experience, while Furner (2004) outlined a taxonomy of information, data, and knowledge, eventually identifying an understanding of information as interconnected with relevance as the approach that is currently most fruitful for research. In spite of the large volume of discussion of the meaning of information, consensus has not been reached.

Library Science, Information Science, Library and Information Science

The lack of consensus regarding the meaning of *information* poses difficulties for developing an understanding of the meaning of *information science.* Exploration of this term has been undertaken as well, notably in Schrader's (1983) ambitious dissertation, *Toward a Theory of Library and Information Science.* In it, Schrader attempted to gather definitions of library science and information science from approximately 100 years' worth of literature. A subsequent article (1984), based on an adaptation and expansion of part of his dissertation, focused on the disciplines that preceded information science and examining the significance of those terms and their ultimate adaptation.

Vickery (1997) examines the metatheoretical underpinnings of information science as demonstrated by its relationship to concepts such as information, knowledge, and relevance, among others. Ultimately, Vickery concludes that the meta-theoretical underpinnings of much of information science, particularly as relates to *information seeking*, need to be reexamined.

Saracevic (1999) was careful to identify his analysis of information science as an essay, by nature a "personal analysis and expository" as well as an "attempt" at the topic. In addition to addressing the problem of defining the field of information science, Saracevic discussed issues related to identifying disciplines and related distinctions.

LIS literature also includes several discussions of the conceptual issues surrounding library and information science and library science. Shera (1972) discussed these concepts as well as information, knowledge, and epistemology, concluding that the skills of the librarian are uniquely well suited to addressing epistemological questions. Vakkari (1994) presents a broad picture of the shifting theoretical foundations of library

and information science as well as a general discussion of issues related to the establishment and maintenance of a discipline.

In a call for a more comprehensive theory to unify the traditional concerns of librarianship, McGrath (2002) draws a comparison to the Copernican revolution and subsequent discoveries and theoretical advancements that brought the natural world into a singular order. McGrath sees the possibility for the concerns of librarianship to be ordered and systematized in a similar fashion.

Relevance[3]

Another concept that is fundamental to LIS but lacks an immediately apparent meaning is relevance. Though multiple examinations of the nature of relevance have been published, Saracevic remains the most prominent investigator on this topic, beginning with his 1970 dissertation. In this influential work, Saracevic presented first the historical application of the concept over the course of twenty years, beginning with the establishment of information science in the 1950's. Several of Saracevic's other publications deal with the concept of relevance, including a 1975 article that examines the role that relevance plays in disciplines other than information science. Mizzaro (1997) also endeavored an historical overview of discussion concerning the concept of relevance and determined that Saracevic's work in the 1970's had not been followed by anything nearly so comprehensive. Mizzaro considers his work to be more of an annotated bibliography of writing about relevance than an examination of the meaning of the term itself.

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[3] *Relevance,* or a piece of information's ability to address the needs of the seeker, is linked to *use*. Please see pp. 143-145 for a fuller explanation.

Cooper (1971) examined relevance in order to identify a definition of the concept specifically for information retrieval. Ultimately, Cooper represents increasing relevance as a tree of sequential component statements.

Other Concepts of Interest to LIS

Scholars have conducted analyses of several other concepts within the framework of LIS, including Ali's (1992) examination of the "balanced collection" in the collection development literature of the period between 1970 and 1990. Akin's (1997) dissertation investigated the significance of the term "information overload" in three different bodies of literature, including LIS. Tidline (1999) also addressed the concept of information overload, ultimately concluding that the forgone assumption of the existence of information overload has not been investigated with any sort of rigor, and is, in fact, a mythological construct.

Hjørland (1992) discusses the concept of "subject" or "subject matter" in LIS from an epistemological standpoint, categorizing understanding of subject matter by theoretical framework or position. Hjørland identifies four conceptual frameworks for ideas of "subject": subjective idealism, objective idealism, pragmatism, and materialism/realism. The realist/materialist viewpoint of subject, according to Hjørland, allows the subject of a document to be identified from its potential for epistemological contribution to the individual.

Table 2.

Conceptual Studies in LIS Literature

Concept	Author	Date	Approach and findings
Information	Derr	1985	Analysis of information in "ordinary discourse," identifies basic characteristics of information, described as an abstract phenomenon
	Zhang	1988	Examination of Information in various disciplinary traditions resulting in visual representation of information's disciplinary dimensions
	Buckland	1991	Examination of uses of "information," identifies three conceptualizations of information: as process, knowledge, and thing
	Radford	1993	Foucauldian discourse analysis of information and communication
	Meadow & Yuan	1997	Review of definitions of information in writings about socioeconomic development, endorsement establishing "common basis" rather than set definitions for discussion of key concepts
	Case	2002	Review of discussions of information, settles on broad application of "information" to include data, knowledge, and wisdom
	Capurro & Hjørland	2003	State-of-the-art discussion of information, statement about importance of clarifying terminology and concepts for theory
	Malone & Elichirigoity	2003	Analysis of discursive construction of information as commodity, determining that NAICS classification of information used to solidify "information economy" and information as commodity concepts
	Furner	2004	Investigation of definitions of data, information, knowledge; develops taxonomy, interconnects DIK with relevance
	Bates	2005	Investigation of information, data, knowledge in terms of physical, biological, and social theories of human experience
Library Science, Information Science, LIS	Shera	1972	Discussion of basis of library science, its relationship to related concepts, including epistemology, to which Shera feels that librarians are uniquely well suited to investigating.

Concept	Author	Date	Approach and findings
Library Science, Information Science, LIS	Schrader	1983, 1984	Exploration of definitions of information science in 100 years' worth of literature resulting in identification of over 1,000 individual definitions
	Vakkari	1994	Broad review of development of IS and LIS
	Saracevic	1999	Essay discussing problems related to identifying disciplines, including IS
	McGrath	2002	Comparison of LIS to Copernican revolution and subsequent shifts in thought about the natural world; concludes that Librarianship's concerns could also benefit from being brought under an "umbrella theory"
	Vickery	1997	Discussion of metatheoretical underpinnings of IS as demonstrated by relationship to information, knowledge, relevance concepts; concludes that Metatheory of IS needs reexamination, particularly as relates to information seeking
Relevance	Saracevic	1970	Vol. I is a treatise, reviewing discussion of relevance in literature from early 1950's; volume II presents findings of study testing hypothesis of nature of "relevance."
	Cooper	1971	Attempt to identify definition of relevance specifically for information retrieval, eventually settling on a model of increasing relevance as a tree of sequential component statements
	Saracevic	1975	Review of relevance in disciplines other than IS
	Mizarro	1997	Historical overview of work on relevance; concluded that Saracevic's work in the 1970's has not been matched.
Information Overload	Akin	1997	Explication of information overload through examination of three different bodies of literature, including LIS
	Tidline	1999	Review of mythology of information overload, concludes that information overload does not exist as an empirically established concept
Subject	Hjørland	1992	Identifies four conceptual frameworks for "subject:" subjective idealism, objective idealism, pragmatism, and material-ism/realism.

Selecting a Method of Concept Clarification

In spite of a great deal of discussion about the lack of an adequate under-standing of the fundamental concepts of LIS, very few exemplars of methods for clarifying concepts are evident in the discipline's literature. Although concept explication and discourse analysis each seemed promising initially, neither approach seemed de-signed to completely satisfy the objective for this project: to clarify the ways in which *use* is discussed in the literature. The goal of explication is to establish a finite definition for a concept. According to Hempel (1952), an explication must satisfy two goals: the explicative definition must be sufficient to substitute in phrases that previously included the term in question, and second, the explicated term should provide a solid basis for comprehensive empirical exploration (p. 11).

Preliminary exploration of the discussions of use in the literature revealed presentation in such clearly differing contexts and with differing meanings that providing an authoritative definition seemed impossible. This project was designed to focus on the *concept* of use rather than the *definition* of use, the difference being that, as explained by Belkin (1978) in his discussion of the concept of information,

> A definition presumably says what a phenomenon defined *is*, whereas a concept is a way of looking at, or interpreting, the phenomenon. By accepting the idea of a concept, one becomes free to look for a *useful* concept, rather than a universally *true* definition (p. 58).

Concept Analysis

Although the theoretical basis of Discourse Analysis informs this project, the lack of an identifiable method for conducting an analysis of the use concept within the discourse of LIS was troublesome. Therefore, it became necessary to identify a

methodological model for examining the meaning and significance of concepts while remaining true to constructivist view of language reflected in discourse analysis. Exemplars of a type of concept exploration appropriate to this project were uncovered in the literatures of political science and nursing. Although "concept analysis" can refer to the general task of analyzing a concept without identifying a specific method for doing so, there are several specific methods for analyzing concepts in a manner appropriate to the objective of this project.

Nursing

Nursing scholars and practitioners have long been concerned with clarifying concepts for the purpose of building theory. While most early analyses of concepts such as anxiety, loneliness, and reassurance demonstrated little "consideration of method" (Norris, 1982, p. 4), Tudor's 1952 study applied clinical data to the examination of the concept of mutual withdrawal. Psychiatric nurses led the vanguard in concept analysis. Early nursing concept analyses were likely highly influenced by Hildegard Peplau, a nursing theorist who emphasized the importance of documenting practical procedures for refinement and reflection, leading to improved, more effective practice (Norris, 1982, p. 5). Peplau's influence, and the likely effects of readily available grant funding for psychiatric nursing research, spurred an emphasis on the development of theoretical bases for practice and recognition that lucid concepts were necessary components of theory.

Although explorations of concepts were commonplace in the nursing research by the mid-1960's, little had been done to establish explicit methods for such research (Norris, 1982, p. 6-7). References to a cluster of workshops and conferences held in the

late 1960's and early 1970's indicate that this deficiency was a concern for nursing scholars. Indeed, the first attempts to elucidate the process of concept analysis came shortly thereafter, and the tradition has grown to accommodate multiple methodological approaches and theoretical frameworks.

Walker and Avant's Approach to Concept Analysis

Concept Analysis (CA) was not formalized as a method for nursing scholarship until the publication of Walker and Avant's (1983) *Strategies for Theory Construction in Nursing*. Now in its fourth edition (2005), Walker and Avant's text presents a concept analysis method adapted from Wilson's (1963) *Thinking with Concepts*. Wilson's method, originally devised for use in compository writing, outlines eleven steps for analyzing a concept. Walker and Avant's approach describes eight:

1. Select a concept
2. Determine the aims or purposes of analysis
3. Identify all uses of the concept that you can discover
4. Determine the defining attributes
5. Construct a model case
6. Construct borderline, related, contrary, invented, and illegitimate cases
7. Identify antecedents and consequences
8. Define empirical referents (p. 39)

Walker and Avant's approach became popular almost immediately and served as the basis for at least two variations: Chinn and Jacobs (1983) version of the method, which is more contextual and allows for overlap of the steps, and Schwartz-Barcott and Kim's (1993) Hybrid model, which incorporates fieldwork into the traditionally more text-based approach of Walker and Avant.

Morse's Criterion-based Method

Morse's (1995) contribution to concept analysis in nursing was the Criterion-based method, in which concepts that have been judged "partially mature," or having "ambiguous meanings and inconsistent application in research and practice" (Weaver, 2005, p. 75) are subjected to critical appraisal through the examination of a series of analytical questions developed from and redirected toward the literature in question.

Catherine Norris (1982) identified four goals for concept clarification; to describe, explain, and give meaning to human behavior; to systematize observations and descriptions, to provide an operational definition of the concept for empirical study, and to develop a model to simplify understanding and identifying instances of the concept (p. 16-17).

Because these approaches to concept analysis do not take into account the temporal, situational or disciplinary contexts in which a concept is used, Rodgers (1987, 2000) found them lacking. For example, our understanding of the concept of *hat* would differ greatly today from understandings 500 or even 50 years ago based on cultural and societal norms. Rodgers also questioned the usefulness of these approaches to clarifying abstract concepts.

Rodgers' Evolutionary Concept Analysis (ECA) Method

According to Rodgers (1987),

> An effective method for concept analysis would need to accomplish three things: avoid the mind-body dualism problem, reject the need for a strictly defined set of attributes for the concept, and address differences in the understanding of a concept depending on contextual factors such as time period and academic discipline. Finally, an effective approach to CA must investigate the relationship between concepts and the process of knowledge development (p. 204).

Rodgers' approach, which she called *Evolutionary Concept Analysis* (ECA), integrates the views of concepts as expressed by Gilbert Ryle (1949), Stephen Toulmin (1972), and Ludwig Wittgenstein (1953), emphasizing the public role in concept development through examination of the application of concepts within a given context or group of contexts in order to identify its attributes within that context.

Rodgers (2000) identified several steps in an Evolutionary Concept Analysis. After identifying a concept for analysis, the researcher must select an appropriate "realm" for data collection. Due to its emphasis on historical and disciplinary context, Rodgers' ECA is especially well suited to examining treatment of a concept within a specific body of literature. In cases in which the volume of literature generated is too large to be manageable, Rodgers recommends reducing it by limiting one's search by time period, type of material, or to an individual or group of journal titles. If such efforts fail to sufficiently reduce the volume of literature to be studied, Rodgers advocates for creating a stratified sample if the relevant body of literature is too large to be managed (p. 87-9). In this respect, ECA stands in contrast to other Concept Analysis approaches, which generally do not suggest systematically sampling the literature. Because the goal of a concept analysis is to achieve a fuller understanding of a concept, Rodgers suggests that it is appropriate to identify influential or "classic" works related to the concept in question and include them in the data set, regardless of their appearance in the initial sample (p. 90).

After assembling the final data set, the researcher must review appearances of the concept in question, asking the following questions:

1. What is happening when an instance of this concept occurs?
2. What happens before and after/as a result of an instance of this concept?
3. Is this concept used differently in different situations or by different types of people?
4. What terms substitute for the concept being investigated?
5. What concepts or terms frequently appear in close literal or figurative proximity to the concept in question? (p. 91-2)

After interrogating the data in this manner, Rodgers suggests approaching analysis of the data by examining representations of the concept's attributes, context, and referents as separate entities. From this, the researcher can identify major themes or aspects in the meaning and development of the concept. Although Rodgers advocates for examining a concept throughout the time period in which it is utilized, discussion of the chronological transformation of a concept is not necessary for every concept analysis (p. 91).

The final step in ECA is identifying an exemplar or *model case* of an instance of the concept as presented in the literature. Though other approaches to concept analysis permit the researcher to construct and present a model case, Rodgers suggests that it is more appropriate to identify an actual instance of the concept, possibly from outside the initial literature sample, or through observation or interviews. Rodgers points out that this exemplar is not an ideal example of the concept, but one that is illustrative of the application of the concept within a specific context. If the concept appears in a variety of contexts, multiple cases may be presented. Identification of an exemplar may not be possible, and this, according to Rodgers, is not a limitation of the study but provides information about the application of the concept (p. 96). Rodgers stresses that the results of a concept analysis utilizing her approach "do not provide *the* definitive answer to questions concerning what the concept is. Instead, they may be viewed as a powerful heuristic, promoting and giving direction to additional inquiry" (p. 97).

Rodgers' ECA is particularly well suited to this project because its emphasis on the contextuality of a concept's application directly reflects the theoretical basis of discourse analysis. Although never using the word "discourse" in describing her approach, Rodgers states that

> The process of abstraction, clustering, and association of the concept with a word…is influenced heavily by socialization and public interaction. The development of a concept for a person takes place with guidance from the social context in which the person interacts and develops concepts. As contextual factors vary, there will be variations in concepts over time or across situations (p. 78).

Criticism of Nursing Concept Analysis Methods

Risjord (under review) called for researchers to strengthen Rodgers' approach by paying close attention to the treatment of the concept in different theoretical contexts and carefully identifying such contexts in order to more closely tie analysis of the concept to the theories in which it is used. He also suggested that it is important to identify both colloquial and theoretical applications of a concept. It is true that many concepts are employed in both manners, sometimes within the same work. Theoretical concept analysis examines the role of the concept in question to theory, including its operational or practical application. Colloquial concept analysis, by contrast, identifies the meaning of a concept to a specific group of people, such as a type of practitioner or member of an academic discipline. Risjord recommended focus group and interview methods for particularly effective colloquial concept analysis.

Paley (1996) questioned the prevailing wisdom that concepts are the "building blocks of theory" (p. 576). Instead, he says, the meaning of a concept in a specific work of empirical research is determined by its placement within the theoretical framework that

within which the research in question has been placed. In light of this, Paley rejects a need for concept clarification. Paley's idea of the relationship between concept and theory extends to the operationalization of the concept for purposes of empirical inquiry. "A decent theory of [a concept]…will tell us how [that concept] will be measured" (p. 577). Concerns about clarifying concepts for operationalization in empirical research are unfounded, because "there is only theory, with meaning and methods of measurement being part of what a decent theory supplies" (p. 578). Concept clarification is, according to Paley, a "meaningless and vacuous exercise"
(p. 578).

While Paley's commitment to a prominent role for theory in empirical research may be admirable, his dismissal of analyzing the role played by a specific concept in a particular context takes for granted that empirical research always presents the particular theoretical framework that informs the researcher. Even a cursory examination of the research of any of the disciplines of social sciences reveals that this is not the case; the research of library and information science is no exception.

Typology

Through the process of data analysis, the need for a structure of the findings of this project became evident. This led to *typology*, defined in the OED (online) as "the study of classes with common characteristics; classification, esp. of human products, behaviour, characteristics, etc., according to type; the comparative analysis of structural or other characteristics; a classification or analysis of this kind." Although typology and *taxonomy* are similar terms and frequently used interchangeably, taxonomies are

constructed empirically, while typologies are conceptual in nature (Bailey, 1994, p. 6). Bailey (Ibid) describes typology as both "multidimensional and conceptual" (p. 4).

Typologies descriptively differentiate aspects or characteristics of a phenomenon or group. According to Patton (2002), typologies codify differing instances of a phenomenon by identifying and classifying variations in that concept or phenomenon's characteristics. Unlike taxonomies, typological identification of a concept or phenomenon's attributes needn't be exhaustive in order to be useful; identification of additional attributes and variations among attributes within instances of the concept or phenomenon in subsequent research projects is, in fact, desirable (p. 457).

Patton distinguished between indigenous typologies, which are created by the group connected to the phenomenon being studied, and analyst-constructed typologies, which "[identify] and [make] explicit patterns that appear to exist but remain unperceived by the people studied" (p. 459).

Weber's *Ideal Type* is closely related to typology. An "ideal" example of a phenomenon is one that comprises all "relevant" dimensions of the phenomenon, and that none of these dimensions be "blurred, dull, impure, illegible, ambiguous, or similarly difficult to discern" (Bailey, 1994, p. 19). The similar, but less rigorous *Constructed Type* is constituted of a collection of attributes most common to the type in question. Both the Ideal and Constructed Types can be used as points of comparison for empirical analysis of subsequent incidences of the phenomenon to be analyzed.

Paul Lazarsfeld (1972), one of social science's most prominent theorists in the area of typology said that creating a typology for a concept or group is only useful if the typology enables other researchers to classify an example of the phenomenon or group. A

typology should, ideally, have further empirical application. Because *use* as represented in the LIS literature is clearly a multidimensional concept, typology provides an ideal format for presenting its facets.

Approach to the Question

As with any empirical project, a concept analysis must have a body of data from which to work. For several reasons, the literature of Library and Information Science (LIS) was the most appropriate source of data for investigating construction of the *use* concept. While an analysis of the use concept based on interviews with librarians and other stakeholders, or on observation data, would be valuable, it would be impossible to examine the application of the term in other time periods. In addition, unless interviews or observations were limited to one type of library or information resource and geographic region, it would be nearly impossible to collect a meaningful amount of data for this project. Professional and scholarly literature, on the other hand, reflects the discourses of the period and discipline to which it belongs and can represent a wide range of theoretical, practical, and empirical viewpoints. Its static nature also seemed to lend itself more readily to the analysis required by this type of project.

Building a Body of Literature

> Any analysis whose aim is to show how information, its users, and its uses are discursively constructed is, necessarily, a historical project.
>
> (Frohmann, 1994, p. 127)

While LIS as discipline and practice certainly share a corpus of written work, since the founding of *Library Journal* in 1876 the discipline has grown to accommodate

hundreds of journals on ever-more specific areas of librarianship and information science. Similarly, the number of professional organizations associated with librarianship and information science has increased dramatically since the founding of the American Library Association (also in 1876). Even the nomenclature used to describe what was once known as "librarianship" or "library economy" has expanded to include information science, digital librarianship, special librarianship, academic, public and school librarianship, library science education, and countless others. Once one has taken an insider's view, it is difficult to argue for *one* appreciable "discourse" of LIS. It seems more likely that there are several inter-related but ultimately separate discourses representing aspects of the field that can be distinguished in several different ways, for example, LIS as a practice vs. LIS as a theoretical endeavor. Paying attention to the context in which a text is created is a critical aspect of discourse analysis, as "it is this connection between discourses and the social reality they constitute that makes discourse analysis a powerful method for studying social phenomena" (Phillips & Hardy, 2002, p. 5). The goal for this project was to take what Phillips and Hardy call a "three-dimensional" approach to examining *use* in the discourse of LIS, attempting to "connect texts to discourses, locating them in a historical and social context…" (p. 4).

Examining 130 years of journal literature in any field is a daunting task, and the literature of LIS is complicated by the diversity of interests represented. There are peer-reviewed journals in every subset of librarianship, information science, library science, and library and information science, as well as a large number of practitioner-oriented publications that may or may not utilize peer review. Additionally, still other journals fall somewhere between these two categories, employing peer review for some, but not all,

submissions. In order to perform a study of this nature, it is necessary to assemble a corpus of literature for study that is both representative and manageable. Construction of the corpus of literature was approached from multiple perspectives.

LIS journal literature is covered by two print subject indexes: Cannon's *Bibliography of Library Economy* (1876-1920), which was renamed (as a serial publication) *Library Literature* in 1921, and *Library and Information Science Abstracts (LISA),* which began publication in 1969. *Library Literature* is available in electronic format as *Library Literature and Information Science Full-text* (1983-present) and *Library and Information Science Retrospective,* which covers 1905-1983. Electronic indexing coverage of LIS publications is also provided by *Library, Information Science and Technology Abstracts (LISTA),* as well as in several general-interest indexes and databases such as the *Social Sciences Citation Index* and EbscoHOST's *Academic Search Premier*.

The three LIS databases (*Library Literature & Information Science Full-Text, Library Literature Retrospective,* and *LISTA),* were the most important tools in assembling relevant literature for study. Because each database has different content and chronological scope, all three were searched with a combination of "use, usage, utili* (for utility, utilize, utilization)" in title, subject, and/or abstract. H.W. Wilson, Co.'s 2007 release production of *Library Literature Retrospective* was a real boon to this project; prior to its release, early LIS literature was indexed in print format only. This project's topic and the ubiquity of the word "use" in the English language made building a corpus through print indexes difficult at best. *Library Literature Retrospective* lacks abstracts for

many of its older entries, so it was necessary to cast a wider net and search for these terms in title or subject, eliminating irrelevant items after the initial retrieval.

Results from the LIS databases were supplemented by querying WorldCat (for monographs and other print materials), ProQuest's *Dissertations & Theses*, and the *Web of Science* and its print counterparts, the *Social Sciences* and *Arts and Humanities Citation Indexes*. Some general databases, such as ProQuest's *Research* and EBSCO's *Academic Search Premier* offer excellent coverage of selected LIS publications and were consulted as well.

Completion of the process of searching these resources, reviewing results along the way and disqualifying items that were not immediately relevant, retrieved records for over 4000 individual items. Because ECA takes a fine-grained approach to textual data, it was necessary to reduce this initial body of work to a more man-ageable number. The decision to limit data collection to journal literature was borne of necessity; according to Rodgers, this type of selection is a legitimate way to limit an overly large corpus of literature for study. After separating the journal literature (which numbered approximately 3500) from other types of material, individual items were listed in chronological order and the first record of each ten was selected, bringing the number down to a more manageable 350. The initial list of 3500 journal articles was then revisited; works that were deemed important but had not made the initial cut were re-added, bringing the list back to over 400, still too high a number for effective analysis. This was done with the awareness that upon actual analysis of the works, many items would not yield meaningful data for consideration and would be discarded. Eventually, the final corpus numbered approximately 200.

It bears mentioning that the purpose of selecting the first of each ten records was merely to reduce the list to a reasonable number of items for consultation, not to establish a final list that was representative of the original item set in terms of scope or chronology. The goal of this research project was not providing a definitive explanation of the meaning of use in LIS or proving hypotheses about its meaning, but "looking at, or interpreting, the phenomenon" of use in the LIS literature (Belkin, 1978, p. 58). Therefore, maintaining a corpus of literature that reflected the initial result was not necessary. In fact, it was anticipated that certain source journals or time periods would be less fruitful than others in terms of yielding actual data; this fact in itself is important.

Approach to Analyzing the Data

A hybrid approach to textual analysis based largely on Rodgers' Evolutionary Concept Analysis (ECA), seemed particularly appropriate to this project due to its recognition of the importance of considering the *contextuality* of a concept in the analysis process, a philosophy that is akin to reflecting upon the *discourse* in which a concept is situated.

To begin, each item in the data set was assessed for the following:

1. Appropriateness/suitability to the project
2. Central purpose or argument
3. Theoretical framework/philosophical or academic tradition represented
4. Methodology (if empirical)
5. Characteristics or attributes of use represented

Rodgers' multi-step approach to concept analysis was adapted to examine *use* by asking the following questions of each item in the data set:

1) When the author discusses “use” in this piece, what is he/she discussing?
2) What is happening in the piece when discussion of “use” occurs?
3) If the piece presents empirical research involving “use” is an operational definition of “use” provided?
    A. If so, what is it?
    B. If not, is it possible to discern the implicit operational definition (and what is it)?
4) If evident, what happens before, after, and/or a result of an instance of “use” in this piece?

Taking the data set as a whole, the following was continually considered:

1) Does the application of the use concept vary depending on the situations or players involved in the discussion?
2) If so, in which broad contexts is the discussion of “use” likely to occur?
3) What terms substitute for “use” in the literature?
4) What concepts or terms frequently appear in close literal or figurative proximity to the use concept?

Unit of Analysis: Journal Article or Mention of Use*?*

Our understanding of what is meant by authors who discuss this complex concept in the literature of LIS is complicated by the fact that within an individual study or essay, several dimensions of the use concept may be presented with little effort made on the part of the author to distinguish what is meant by each. For example, Hiatt’s (1965) discussion of the efforts of two Baltimore branch libraries to attract adult patrons “of low education” (p 81) presents multiple dimensions of use in one research project. In it, Hiatt relates how one patron came to “use” his local branch library: “he had been ‘using’ another branch for four years; that is, he has two children who…were told by their teacher to use the public library. He started taking them to his neighborhood branch. ‘I used to bring them to the library and wait’…it never occurred to him to use the library himself” (p. 88). Hiatt goes on to speculate, “this might have remained his level of library use indefinitely” (Ibid). The

turning point, after which the man in question began to borrow books for himself to assist him with classes he taught at his church, was his attendance at a library-sponsored program. Because the man checked his books out from a different branch than that to which he took his children, Hiatt observes that “he uses his neighborhood branch in his role as mentor—taking his children to the library—and [the other] branch in his avocational role as church leader” (p. 89).

CHAPTER 4

USE [4] IN THE DISCOURSES OF LIBRARY AND INFORMATION SCIENCE (LIS)

Early Discussions of Use in the Library Literature

By their nature public institutions, libraries have always been interested in *use* as an indicator of their patrons' satisfaction with library materials and services. References to "use" can be found in articles about librarianship in the 1876 inaugural issue of *Library Journal*, the first American publication devoted to libraries and librarianship. Even

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[4] A Note about Terminology

The 5th Edition of the *Publication Manua*l of the American Psychological Association (APA, 2001) allow italicization of a "new, technical, or key term or label" in its first appearance, but subsequent appearances of the word should not be italicized. Because "use" is such a common word in the English language, I am hoping for the reader's indulgence in allowing me to apply the following scheme to appearances of the word:

- References to use as a concept will be italicized once after references to other types of use have been made. References to the "use concept" or "use as a concept" (without italics) share this meaning.
- Unitalicized, the word use appearing in discussion of a study or research report, denotes that the word appeared in the study with no further explanation of the type of use being discussed.
- *Use-action*, *use-measure*, or the phrase *measure of use* refer to an instance of an individual type of use, such as circulation, door counts, database log-ons, or instances of information seeking.
- Individual types of *use*, such as information use, circulation use, journal use, and facility use, will be identified by name where possible.

Applying this approach to representations of the term *use* will allow the nature of the word's original appearance in the literature in question to remain clear.

earlier, a 1874 article in the *Presbyterian Quarterly and Review* discussed the "useless or unattractive" nature of many libraries' "possessions", which the author saw as demonstrated by “the slender attendance of borrowers when the library is open, by the proportion of those who enter and take nothing away, and by the small ratio of the loans in a year, or even in a college generation, to the whole mass of the library. By all these indications it appears that our college libraries are of little use to the students..." By this author’s estimation, “use” seems equivalent to “book circulation” (unpaged).

In 1931, Shiyali Ramamrita (S.R.) Ranganathan published *The Five Laws of Library Science*, which remains one of the most enduringly influential works in the history of librarianship; in the years since 1984 it has been cited 49 times (at least once each year except 1989) in journals indexed by ISI’s *Web of Science*. The first of Ranganathan’s Five Laws of Library Science is, simply, “Books are for Use.” Ranganathan’s explanation of his first law makes clear that he intends “books” to be an analogy for all library resources and services. Ranganathan says that following the first law has an impact on library policies for circulation, access, and hours; librarian service and attitudes toward patrons, building location and layout; he even stresses the importance of optimizing the location of the librarian’s office within the building and the providing comfortable furniture for patrons (Ranganathan, 1957). In spite of the detail he provides in the explanation of his first law, Ranganathan never explicitly defines what he means by “use”. Shera (1954) interprets it to be “the use of the intangible thought content of the book and its indirect use as a physical embodiment of that thought content” (p. 255).

Also due to their nature as public institutions, libraries have certain expectations of accountability. In response to perpetual requests for assessment, libraries developed the *use study*. In 1933, for example, Alvin C. Eurich authored "Students' Use of the Library: Seasonal Variation in the use of a University Library." The article, which appeared in the *Journal of Higher Education*, measured "seasonal variation in the use that students make of the library facilities" (p. 421). As in the article from the *Presbyterian Quarterly and Review* (1874), it is clear that although Eurich's references to "use" in both the article title and the text of the article are to only one type of use in one area of the library: the number of books circulated in the reserve room.

Perhaps not surprisingly, early discussions of library use focused almost exclusively on this type of quantitative measure. With circulation, other statistics that were examined included door counts (the number of people who entered the library, often counted by turnstile) and, sometimes, the number of questions asked at a library reference desk. To be fair, book circulation was a fairly accurate representation of the scope of services offered by libraries of the early 20th Century. Reference service as we know it did not become widespread until the late 1940's and 1950's (Hamlin, 1981, p. 143).

More Recent Discussions

As the ASIS&T panel session description stated, there has been little discussion of the concept of use since this time period. It is possible that the dramatic changes in the library landscape over the intervening 25 years obscured the discussion. User and use studies did not stop, however; *Library Literature and Information Science Full-Text* indexed 854 use studies published between 1980 and 2005 related to academic libraries

alone. The abundance of reports on the outcome of this type of study has been countered by a dearth of conceptual development of the idea of use. As types of library use diversify and become less easily observed, the absence of a common understanding of the concept being studied so voluminously could contribute to even greater ambiguity.

In spite of the frequency with which use is discussed in the empirical, theoretical, and practitioner-oriented literature of LIS, we still lack an understanding of its significance, attributes, and means of measurement.

Questions to be Addressed

A number of questions surround the nature of the use concept in Library and Information Science (LIS). What *does* it mean to use a library or an information resource? Does one use the library merely by walking through the door, or must one remove a book from a shelf in order for *use* to take place? If these acts are not sufficiently significant to constitute occasions of use, will checking out a book suffice? If so, must the book be read? If the book must be read to constitute use, must it have a demonstrable effect on the reader? Does use only occur if the information in the book is proven to have been applied by the patron in the form of a citation?

Digital information technologies enable information seekers to access library resources without setting foot in the library. This further complicates the question of library resource use: if a patron's remote access to a database through a library's subscription seems to be an obvious instance of *use* to a librarian, is it equally obvious to the patron that she has used a library resource without leaving home? As individuals turn to the World Wide Web for more of their information needs, how do we track information

use that is completely removed not only from the physical space of the library, but any human intermediary?

How do discussions of use of libraries and their resources differ from considering the use of, more generally, information? We know that while libraries are a source of information for many, the majority of information seeking and use occurs with no connection to libraries at all. Does our understanding of use in the library context contribute to our understanding of the use of information? Has the research on information seeking and use had an impact on information professionals' approach to understanding their users' behaviors? Finally, to what extent does the research literature of LIS demonstrate an understanding of the meaning of the use concept?

Structure of Findings

The data analyzed for this project are comprised of approximately 200 journal articles and supplementary materials from the professional, scholarly, and practitioner-oriented literature of Library and Information Science. While "Library and Information Science" is frequently referred to as a unified discipline, in fact it represents at least two traditions that developed separately: Information Science, which developed from the discipline of documentation and is primarily concerned with the nature of information and its organization, seeking, access, and use by people both alone and with the assistance of technological tools. While library science is also concerned with the nature of information, that concern is located within the context of the library. Additionally, library science addresses the theoretical and methodological basis of the acquisition, intellectual and technical processing, and provision of access to services and information resources:

the business of library work. The two share common ground in the form of "their social role and…their general concern with the problems of effective utilization of graphic records" (Saracevic, 1992, p. 13), but differ significantly in practical, theoretical, and empirical concerns. For the purposes of this study, I approach LIS in the spirit of Bates' (1999) assessment of the discipline(s):

> Both librarianship and practical information science, however, have the information perspective in common, and the phrase "library and information science" or "LIS" has become very common. I believe that this coming together arose out of deep commonalities in the way of thinking and doing necessary to achieve information work objectives. Although librarianship and information science have very different histories, and, in particular, different methodological and values perspectives, they have in common this core relationship to the material of their work (p. 1046).

Though the sub-disciplines of LIS approach it from different perspectives, both are concerned with use: of information, of materials containing information, of the facility of the library (a storehouse of information), and of resources and services that facilitate users in the location of information. The similarities and differences in the treatment of *use* in the different traditions in LIS will help to provide nuance and shading to our understanding of the concept.

Use is a Dimensional Concept

Review of an extensive sample of LIS literature reveals that *use* is not only a multidimensional concept rather than a singular phenomenon, but that the dimension of use being represented is dependent upon the context, or discourse, in which it is discussed. While use is addressed in the LIS literature in many different types of works, discussion tends to fall into several broad contexts, or discursive categories, each of

which assigns *use* unique metaphorical and operational meanings. In brief, the use concept most frequently appears in one of these discursive contexts:

- Evaluation: the measurement of use-actions associated with a particular type of resource (e.g., journals), service (reference) or entire library for evaluative purposes, including:
  - Prediction: evaluating measurements of past use-actions in order to develop instruments to predict future use-actions of a particular resource, service, or facility
- Theoretical: general, philosophical, or theoretical discussions of *use*
- User-centric: discussions of *use* in the life of the user.

Additionally, *use* appears as a connected, though secondary, concept in discussions of related topics. In each of these categories, use is constructed differently and is assigned different tacit and explicit meanings. *Use* is also frequently presented in multiple contexts within one article. For example, Hayes (1992) discusses use of a library collection within the context of evaluating both use and non-use of materials; he also discusses at length the connection between use and the related concept of access. Therefore, in examining the contextual presentation of use in LIS literature, the unit of analysis for this project is the individual discussion of type of use rather than the article as a whole.

Use and User Studies[5]: Perspectives

Studies of the uses made of libraries and the informational resources and services associated with them—initially referred to exclusively as *Use Studies*—can be found in some of the earliest literature of librarianship. The user focus in this type of research, initially associated more commonly with the field of Information Science, first became popular during the boom times for scientific and technological research following the Second World War. Most early studies dealt with information seeking behavior as situated with the user and may or may not have been attached to the library context. Many concentrated on the information use behavior of scientists and those working in technology with the objective of applying knowledge of their behavior and needs to improving information systems. By the late 1970's, however, the scope of use and user studies had extended to other groups. Lipetz (1973) describes the objectives of studying information needs and uses as, in ascending order of potential to contribute to the knowledge base of LIS,

- The explanation of observed phenomena of information or expressed need
- The prediction of instances of information use
- The control, and thereby improvement, of the utilization of information through manipulation of essential conditions (p. 3).

User studies very frequently incorporate a cognitive or affective perspective into examination of information behavior. Caplan, Morrison, and Stanbaugh (1975) identified

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[5] Much of the discussion of *use* in LIS can be classified as either a *use study* or *user study*. According to Pao (1989), user studies can be distinguished from use studies in that the former are "concerned with the *behaviors* and *experience* of users of information systems and services with regard to their *interaction*" while the latter "circumvent direct query of the users", focusing on "observational data based on the use of information materials and services" (p. 40). Broadus (1980) made a similar distinction: use studies "start with a group of library materials, then try to determine what use, or how much use, they receive", while user studies begin "with people and [ask] whether, or how much, they use" library and information resources (p. 317).

three “information processing styles” among their respondents in their use of information in formulation of public policy decisions: clinical, which balances evidence and social issues in examining information; academic, which focuses solely on logic, and advocacy, which focuses less on internal logic in favor of recognizing external issues related to policy.

Dervin and Nilan’s (1986) ARIST review shifted the focus from the methodological approaches taken in information use research to the fundamental conceptual assumptions underlying these studies. Much of the work in this area, the authors found, came from the position that information seeking and use behaviors are static, transactional, externally oriented, and orderly, and could best be measured quantitatively. Saracevic (2006) describes the fundamental conflict between the Systems orientation and the User orientation (as represented by Dervin and others) in Information Science. In response to calls for a more inclusive approach to systems design that would more fully reflect users’ needs, Saracevic says that systems design-oriented researchers responded “Tell us what to do and we will do it.” “Unfortunately, ‘*telling*’ is not that simple” (p. 25). Investigating use from the user’s perspective, without a doubt, consumes more time, money, and effort than does collecting and analyzing data about numeric measures of resource use.

Some have questioned the contribution of the large volume of use and user studies to the knowledge base of LIS. Julien and Duggan (2000) who found, in their analysis of information seeking and use literature, published between 1984-1998, that over three fourths were not grounded in any sort of theoretical framework, wonders what this says about information needs and uses literature “if we accept the argument made by many

critics of LIS research…that non-theoretical research 'is simply description' (Julien, 1996, p. 62).

Use and User Studies: Objectives

Use Studies did not become a *Library Literature* subject heading until 1960. Since then, however, research identified as use or user studies has grown exponentially; a recent search of *Library Literature & Information Science Full Text* and *Library Literature Retrospective* retrieved 6034 items with the *use studies* subject heading. Because *user studies* is not a *Library Literature* subject heading, none were identified as such. So, in spite of explanations like Pao's that make the differences between *use* and *user studies* clear, it is difficult to separate the two using LIS's most extensive subject database.

The major problem with the so-called use study is one of *validity*, or the extent to which the study truly measures the variable or phenomenon it is supposed to. As the services that libraries provide to their patrons have increased in number and type, use and user studies have become more common and have broadened measures of interest to reflect this increased diversity of library services. This expansion of types of use to be measured has not corresponded to greater specificity in terminology, however. As libraries provide a continually widening variety of services to diverse groups of patrons, *use* seems to have become a stand-in term for whatever a "library user" might do, rather than an example of a standard and agreed-upon phenomenon. In spite of all the discussion of and references to use of the library and information resources, there is very little clarity about what use actually is or is not, even in the case of the use study, which is usually an examination of very specific measures of patrons' library-related activities. A Quick scan

of use study abstracts reveals that “use” is employed as a stand-in for a diverse group of activities, such as checking out books (Rushton), studying in the library, entering the library (Albanese), removing an item from the shelf (Altman), or a combination of these and other measures. A great deal of literature also discusses measurement of the use of library-provided electronic resources that can be accessed online, such as proprietary databases. Regrettably, in examining a use study one must frequently extrapolate from the discussion the operational meaning of the type of use in question.

Burns, Jr. (1978) discussed the shift from measurement by *inputs*, which can be described as “needs or requirements of the system to operate or resources consumed in the operation of a system, e.g., money, to examining *outputs*, or “products of a system, or…the impacts of consequences of the system’s operation” (p. 4-5) as reflecting library use-related research moving away from a *materials orientation* to a *user orientation.* While inputs can only be assessed within the library context, outputs can be measured more broadly, through measures including not only traditional measures of library use like circulation statistics, but more meaningful data like improved standardized test scores or graduates’ success at achieving employment.

According to Burns, “traditionally, libraries have equated performance levels with their measures of user satisfaction, but only in terms of outputs from the system. For example, high circulation has always been the hallmark of a successful library system” (p. 4). At the same time, says Burns, libraries have ignored input measures beyond materials budgets and number of items purchased. This has resulted in the unhappy situation of library quality being judged almost solely by circulation statistics and dollars spent, in spite of the fact that “both measures have only the most tenuous relationship to the

qualitative performance measures librarians so diligently seek" (p. 4). Burns adds that use and user studies suffer from the major impediment of a lack of conceptual and operational definition of the terms "use" and "user" as well as of the "information unit" utilized in the study (p. 5). Burns also identified four major research issues related to use and the user:

1) Who are library users?
2) What are the users' problems and needs (real and perceived)?
3) How does the user meet his/her needs?
4) What packages of information and specific items do users assemble to meet those needs?

5) He also suggested three types of data to be collected in a user study:
6) Demographic information about the user
7) Preferential use information (what does user prefer to do?)
8) Behavioral information (what did the user really do?) (p. 7-8).

Many, though not all, of the individual works of literature reviewed for this project could be classified as use studies, user studies, or both. Although the fundamental differences in orientation and focus of the two study types frequently indicate the conceptual and philosophical points of view of the author, they have been treated as an individual discursive context for *use*. There are use and user studies in each of the discursive categories reviewed here.

"What is Use?" *Use* in the Theoretical Discourse of LIS

While the volume of LIS literature that directly confronts and contemplates the use concept and its lack of clarity is not exactly robust, it has not been completely absent. Discussion began in earnest in the 1970's.

Line and Roberts

Line (1974) made one of the first comments about the nature of use and its relationship to other concepts in the *ASLIB* (The Association for Information Management) *Proceedings*, presenting "Draft Definitions" for several concepts related to library use. Specifically: *need* (what an individual ought to have), *want* (what an individual would like to have), *demand* (what an individual asks for), and *use* (what an individual actually uses). In Line's framework,

> A use may be a satisfied demand, or it may be the result of browsing or accident… recognized as a need or a want when received, although not previously articulated into a demand…use is…heavily dependent on provision and availability of library and information service (p. 87).

Essentially, an individual with a problem to solve may not be aware of the need for information, may not want information, and may not ask for information. Still, that person may use information in the solution of a problem that without having been aware of it prior to that use.

Roberts (1975) responded to Line's piece, commending him for attempting to define the terms associated with user studies, acknowledging that "a large number of meaning questions" continue to plague information science. Roberts questioned what he considered the confusing nature of the similarity of Line's terminological choices: *need*, *want*, *demand*, and *requirement*, specifically. In spite of seeing *use* as a term that is "difficult to replace despite its inadequacies" (p. 311), Roberts called attention to the fact that users' and librarians' understanding of the term are likely to differ. According to Roberts, Line's definition—"what an individual actually uses"—reflects the point of view of the patron, not the librarian.

On the other hand, in the execution of use studies researchers frequently operationalize library use in ways that can be measured easily. Use studies, he suggests, measure the popularity of services provided by a library, one of which is making books available for circulation. Therefore, from the librarian's perspective, checking one of those monographs out could be seen as a *use* to be recorded and studied. On the other hand, "it seems…obvious that…taking a book off the shelf does not constitute 'use' from the individual's standpoint" (p. 312). Few attempts, he continues, have been made to understand "the 'use' that is made of what the services provide" (p. 312). Roberts adds, "the overlapping meanings and ambiguities associated with 'use' make vigorous definition and limitation essential in the research situation…Ideally there may be need for terms to convey these 'use' distinctions" (p. 312). Unfortunately, both Line's and Roberts's pieces seem to have gone largely unnoticed, failing to encourage wider consideration of the use concept.

Kidston (1985) replicated and expanded Bookstein's (1982) study of non-librarians' understanding of what constitutes a use of the library or a book. Unlike Bookstein, Kidston attempted to distinguish some type of rule or theme for the actions his respondents considered legitimate library uses, a collection of responses that he found "the hardest…to interpret" of the three areas his survey investigated. "No single rule seems able to embrace all the items. The most likely choice appears to be *interaction with the library's resources*, but there are several exceptions" (emphasis added, p. 148). Eventually, Kidston determined that an action was more likely to be considered a legitimate library use by respondents the less able one was to perform it outside the library, such as reading a non-circulating journal or consulting a reference book. Kidston

further speculated on reasons for differences between results of his study (of business school students) and Bookstein's (of Library School students): "librarians…tend to define use with an eye on the collections themselves, while users define it with an eye on their reason for going to the library" (p. 149).

"How Much Use?": *Use* in the Evaluative Discourse of LIS

A major focus of the literature discussing *use* concerns methods of evaluating or measuring the use of a collection, information resource, service, or facility in order to evaluate its quality. Weiss (1998) defines *Evaluation* as "the *systematic assessment* of the *operation* and/or the *outcomes* of a program or policy, compared to a set of *explicit* or *implicit standards*, as a means of contributing to the *improvement* of the program or policy" (p. 4). In the LIS context these discussions tend either to be situated with assessing instances of use, such as database log-ons or book circulations, or less commonly, with the employment of information by individuals. The latter type of evaluation focuses more on the user's experience of the information or resource and its role in addressing the need that motivated the user to seek the information resource, while evaluations of the former description are usually statistics-based.

Numeric measurements (or "output measures") of use are frequently collected not only by the library or information provider but by larger institutions such as state library agencies, accrediting agencies, consortia, and state and federal government agencies. In addition to providing data for internal decisions, these measurements of use are "trotted out regularly to show the effectiveness of a library" (Fialkoff, 2002, p. 68). These evaluative studies focus on libraries and information agencies in the aggregate or

individually, or focus on an aspect of the services or collections provided. Each type of evaluation tends to measure use differently.

Measuring Use *to Evaluate a Library's Collection*

> *Use* refers to whether and/or how often a book, periodical, or segment of the collection is used. (LRTS, 1983, p. 434)
>
> The principle of usefulness says simply that libraries should collect what patrons use. An obvious problem is that there is no clear definition of what comprises 'use' nor is it likely that library science will soon develop one, for it is as elusive as the concept of information, with which it is confounded. (Swigger & Wilkes, 1991, p. 42)

Libraries and other information agencies invest millions of dollars in their collections in the form of monographs and print and electronic journals. Anyone who has tried to check a bestseller out of the local library knows that some items are more popular than others. One of the enduring quests in LIS is to develop models that will assist with the task of determining which materials will be popular and which will collect dust on the shelves. Toward this end, researchers have collected and analyzed usage statistics in the form of circulation and in-house use data in order to identify "the characteristics of books receiving disproportionately heavy use, [specify] the proportion of overall use a minority of books typically receives, [clarify] the relationship between patterns of in-library use and external circulation, and [study] the stability of use patterns over time" (Metz & Litchfield, 1988, p. 501). For Parker (1982), the underlying principle of collection management is that "some items are more useful than others, and that utility can be measured by demand (i.e., the probability of use)" (p. 124).

Along with rote assessments of statistical measures of use, a number of models have been developed to explain the nature of the use measured. Trueswell (1976)

provided one of the most influential (and enduring) models to examine use. The basis of Trueswell's model, described by Sargent (1979b) as "a major contribution… perhaps the best and most practical technique we have for finding out from circulation statistics how a collection is being used" (p. 551), is an item's "shelf time": or the amount of time between circulations. The longer an item's shelf time, the less likely an item is to circulate in the future. Trueswell also tested the translatability of the "80/20 rule" of stock management to the library, and found that twenty percent of the library's collection accounts for 80% of its use (in terms of circulation). Trueswell (1965) identified this 20% as the "core circulating collection" (p. 25).

Sargent (1979a) reported on a book use study that applied Trueswell's model of the core circulating collection to the library collection at the University of Wisconsin-Oshkosh, a regional state university. Among many important observations about *use* uncovered in this study, Sargent found fundamental discrepancies in Trueswell's model; most noteworthy, that Trueswell's conclusion that its possible to determine the circulating core of a research library's collection fallaciously assumes that past circulation is a definite predictor of future circulation.

Essentially, Trueswell's model assumes that a library's circulating core (which includes, no doubt, items of intense current but little enduring interest) will be the same in five years as it is today. Trueswell's model also sets as a standard for inclusion in the circulating core circulation within the past twenty years. Sargent observes that out that because research libraries add items on a continual basis, items will likely have been added to the collection just days before a use study modeled on Trueswell is conducted; many or most of these will not have circulated. Yet, according to Trueswell's model, they

should be included in what he believes are the 75% of a library's collection that is not "used."

Sargent also discusses a concept of essential significance to the use concept: *obsolescence*. He defines an obsolescent item as lacking information about its subject that is both significant and unique; obsolescent materials tell us nothing important that is not told as well or better in other, usually more recent books[6] (p. 420). He contends that in the research context even such books deemed obsolete in terms of quality can be useful in terms of their representativeness as a type; for example, a scholar studying high school textbooks from the 1940s would likely be interested in any and all examples, even those deemed obsolete in terms of quality. So, according to Sargent, while obsolescence is closely tied to usefulness, an obsolete item may still be useful, if only a specialized setting. Examining Trueswell's work led Sargent to the very reasonable conclusion that library collection use behavior varies according to the discipline with which a specific collection segment is associated.

Sargent was able to classify a large percentage of books deemed obsolete in his study into two categories: *superseded works*, such as reference materials and textbooks, and *outdated controversies*—coverage of specific incidents that hold little interest for modern audiences and little of added value for historians and scholars. Sargent concluded that, in fact, very little of the non-circulating part of the collection could be attributed to poor selection policies, as had been suggested by other scholars studying the issue.

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[6] Sargent's definition of an obsolete item differs significantly from the definition most commonly associated with use studies: an item that has not been checked out in a given amount of time. *Obsolescence* is discussed further in the section about *use* in discussions of related concepts closer to the end of this chapter.

Carrigan (1992) identified *use* as the process through which "the benefits of which libraries are capable and for which they exist" are produced: "use of those materials is the return on the library's investment in the materials" (p. 293). Carrigan extends this "use imperative" to academic libraries, in spite of the fact that they are typically considered to have functions other than circulating materials, including, as identified by Atkinson (1989), "notification, documentation, historical, instruction, and bibliographic" (p. 508). In Carrigan's opinion, those functions "rest on the foundation of presumed ultimate use" (p. 293).

Carrigan advocated for circulation as a proxy for *use*, and suggests that academic libraries would be well-served by analyzing their collections for "proportionate use" by subject, i.e., determining the percentage of the items related to a particular subject that actually circulate. Librarians can then apply this information and "shift acquisitions funds" to higher-circulating segments of the collection "to increase total library benefits and improve return on investment" (p. 295). The difficulty with this, of course, is that a segment of the collection may not circulate heavily because it's not of high quality or currency. Users of a subject collection that's been long neglected shouldn't be further penalized by having funds removed that might be applied to its improvement.

Broadus' (1980) review of library materials use studies presented a variety of findings from studies of various types of use: *circulation, borrowing, withdrawing, checking out, handling, leaving the library, consulting in building*, and *being left on a desk or table* (pp. 318-9). In his analysis of these studies, Broadus broached an interesting subject: that different measures of use of an item are frequently interrelated. One of the studies Broadus cited distinguishes *recorded use* from *browsing*, although he said that

frequent occurrence of one seems to lead to frequent occurrence of the other (p. 319). He also expanded his discussion of use to include *citation* as a form of use. In this, he made reference to Merton's (1968) *Matthew Effect*[7] (which refers to the phenomenon of certain works being cited repeatedly and in disproportion to other works), citing findings showing "that people seek particular books or articles in the library because of bibliographic citations to them" (p. 321), and indicating that uses, as measured one way, may increase uses that can be measured differently.

In concluding his review of use studies, Broadus (1980) asked, "when a book is checked out, what does that really say about use? One book may be studied for twenty hours, another for ten minutes" (p. 323). Indeed, many books are checked out and never consulted.

The Pitt Study

In 1979, a publication appeared at the opposite end of the theoretical spectrum from Zweizig and Dervin's work. Directed by Allen Kent, *Use of Library Materials: the University of Pittsburgh Study*, which came to be known as the *Pitt Study*, reported the findings of a mixed-methods library materials use study at the University of Pittsburgh. The purpose of Kent's study was "to develop measures for determining the extent to which library materials (books/monographs and journals) are used, and the full cost of such use" (Kent, 1979, p. 1). To accomplish this, Kent and his colleagues studied the circulation records for the seven years preceding the study, specifically focusing on data for items purchased in 1965, the first year of data analyzed, in order to determine the

[7] The *Matthew Effect* refers to Christ's words in Matthew's Gospel: "For unto everyone that hath shall be given, and he shall have abundance" (Matthew 25:29, King James Version).

number of times the books circulated within their first seven years of ownership by the library.

While Kent and his collaborators completed the book circulation portions of the study using pre-existing circulation data for the years from 1968 to 1975, they completed data collection for other portions of the study. These included assessing in-house browsing of books, measured by what is often called a *table study*, (examination of books that have been removed from the shelves and left on tables by patrons); and journal "use", measured through a "combination of observation, questionnaire and interview techniques" (Kent, et al., 1979, p. 60). The data Kent and his colleagues collected supported the project's basic hypothesis—that the vast majority of a research library's collection neither circulates nor is accessed in-house.

The findings of the study were hugely controversial. Beyond merely presenting the claim that 40% of the books and monographs acquired by Pitt's Hillman Library in 1968 did not circulate in the subsequent seven years of records, Kent and his collaborators chided librarians to be "responsible" and remedy the situation, presumably through more careful selection of materials for purchase. (Schad, 1979, p. 60) In response, the *Journal of Academic Librarianship* (1979) published "Pittsburgh University Studies of Collection Usage: a Symposium" for which several prominent stakeholders in collection management were invited to share their opinions. Several aspects of the execution of the Pitt Study were criticized, including the accuracy of data and calculations. The conceptual basis of the study—the nature of academic and research library use—was called into question as well, as in Schad's statement: "a third and no less serious error results from the notion that external use [i.e., book circulation] is an

adequate measure of total use" (Schad, 1979, p. 61). Schad identified two kinds of academic library use: *instructional use* and *research use*. Instructional use is characterized by an intensive use of a small body of material and is more easily predicted than research use. Research use is almost opposite in nature to instructional use, tending to be wide-ranging and prone to shifting over time to reflect changes to departmental faculty composition as well as larger scholarly trends (p. 62).

Borkowski and MacLeod (1979) raised similar objections to the Pitt Study, asserting that they were not surprised that the Pitt Study's findings held up well when replicated at a small lending library, because the Pitt Study's premise is much more reflective of appropriate uses (i.e., circulation) in that context than in that of a large research library. They rejected equating *benefit* with *use* in their discussion of the cost/benefit of retaining certain library materials at the University of Pittsburgh's Hillman Library. Different types of uses of an academic or research library collection, they contended, are "apples and oranges" and should not be aggregated for measurement (p. 20).

Although the rebuttals to the Pitt Study offered no explicit definitions of *use*, they did present some insights into the nature of academic library use, or at least the use of its collection. While most of his discussion centered on collection use, Schad did acknowledge that studies of information-seeking behavior such as those proposed by Zweizig and Dervin might contribute more to the understanding of library use than strictly analyzing measurements of collection use (p. 62).

Measuring In-House Use *of Print Materials*

The benefits, challenges, and methods of studying the use of materials *within* the library differ from those of understanding external use. Because in-house use takes place inside the physical facility of the library, improved understanding patrons' reasons for both remaining in the building and not removing items from the building can effect decisions about the physical plant of the library: stacks arrangement, seating provision, lighting, and so on.

In-house use of library materials can refer to use of materials that are eligible for circulation but are, instead, used within the library without being checked out, or of materials that cannot be checked out, such as journals. Current LIS practice lacks an effective approach to studying in-house use; in spite of being controversial, the most commonly utilized method is referred to as a *sweep* or *table study*. In order to conduct a table study, patrons are asked to leave materials they've removed from the shelf on a table rather than re-shelving them. Library staff then conduct incremental counts of the materials that have been left on the tables; each volume is generally counted as a single *use*.

Though little is known about the uses put to books once they've been checked out or electronic journal articles after they've been downloaded, even less is known about the nature and motivations for in-house use. Xia (2004) found that most books that were removed from library shelves but not checked out were from the middle, or easily reachable, book shelves. Is this because patrons who are browsing the bookshelves don't see items on the top and bottom shelves, or because too much effort is required to retrieve

books from less centrally located shelves? Does the same phenomenon hold true when patrons are retrieving known items? [8]

Hayes (1992) identified three significant types of *collection use* to be considered in making decisions that might affect access: *circulation, interlibrary lending (ILL)* and in-house use. While circulation and ILL use are both fairly straightforward conceptually and easy to measure, in-house use, as Hayes described it, constitutes a number of disparate and difficult-to-assess activities, including "browsing with the intent of using the library's collection itself as a means of access and to identify material of interest; rejecting a book as not relevant; confirming a reference; acquiring specific data; photocopying specific pages; following a 'chain' of references", and others (p. 364). Hayes clarified that while some studies (such as the Pitt Study) show correlations between circulation and in-house use figures, others have point to a wide disparity between the two, especially for items that circulate with less frequency—items that librarians are likely to need to assess in order to make decisions about retention, as Hayes pointed out.

Although the list of activities Hayes categorized as constituting in-house use is so broad and vague as to not really be all that helpful, he indicated that the availability of materials for certain types of use depends on collection management policies. In order for a patron to browse a collection, for example, it must be physically accessible. Hayes drew attention the differing costs associated with different uses. The physical accessibility required in order to make browsing use of a collection costs the institution in terms of

[8] In LIS parlance, an item is known if the patron or information seeker has an item in mind before beginning the search. *Known items* stand in contrast to items discovered during a search for materials on a subject for which a specific title or other description of a particular item is not known. For example *Harry Potter and the Sorcerer's Stone* is a known item search; "boy wizards—fiction" is not.

acquisition of the materials and staff time to process and maintain the collection, as well as the costs associated with the physical plant of the library. Browsing also presented costs of use to the patron in terms of time and travel to visit the collection.

In their critique of the Pitt Study Borkowski and MacLeod (1979) made a distinction between in-house use as practiced in a research library and in-house use as measured by table studies. The authors found that not only did many patrons not adhere to requests to leave used items on tables where they had been used, but also observed counting items left on tables did not really reflect the nature of collection use in a research library. Rather, "a typical pattern of use seems to be to go through several books while facing the shelf, reshelving the ones not need at that moment, or needed only briefly, and to take one, two, or three books or monographs to a table or to the circulation desk". Further, the authors observed that "some of the books taken to the tables are left there; others are reshelved when the patron goes to the stacks for a fresh 'browse' or fresh supply of books". According to the authors, these "in-house, consultative, and browsing" uses are what research oriented libraries, as opposed to lending libraries, are specifically designed for (p. 14). University and research libraries are only partly concerned with providing materials that patrons wish to check out. For this reason, they "disagree with the [Pitt] Study's assumption that frequency of 'use' is a 'good'" (p. 20).

Measuring Use *of Electronic Resources*

As the Internet has augmented accessibility and availability of journals and monographs to information seekers both within and outside libraries, more of libraries' energy and financial resources are devoted to realizing the potential of electronic access

to increase and improve service to patrons. The electronic publishing boom, combined with a perceived decline in gate counts, reference transactions, and circulation of print materials has led many to speculate on the extent to which "electronic use is replacing physical use" (Martell, 2007, p. 435).

As "electronic use has skyrocketed" (Ibid.), librarians have struggled to find ways to measure it. Multiple difficulties confront those who wish to evaluate the use of electronic resources by their constituents. Many patrons choose to access web-based materials from outside the library using passwords, reducing librarians' ability to observe their activities. Measuring electronic resources usage statistically is problematic as well; in most cases librarians must rely on usage data supplied by product vendors. Considering that evidence of low usage of an electronic resource might prompt a library to reconsider paying for a subscription raises the concern that vendors have a certain disincentive to report these statistics accurately, or at all (Luther, 2001).

Efforts by Project COUNTER (Counting Online Usage of Networked Electronic Resources) to standardize electronic journal usage reports in terms of presentation and content have been helpful, but not all vendors are comply with COUNTER guidelines, and in some cases, COUNTER guidelines are not as explicit as they could be. Data collected under COUNTER guidelines are still entirely quantitative in nature, assessing only such information as numbers of log-ons, downloads or views of abstracts or articles, and duration of sessions (http://www.projectcounter.org/about.html). Both COUNTER and The Standardized Usage Statistics Harvesting Initiative (SUSHI) of the National Information Standards Organization (NISO) lack a definition for a *usage*; the closest term provided is *usage statistic*, which SUSHI defines as "reports detailing the use of a

customer's electronic resources over a given period of time" (SUSHI, 2007, p. 2). In other words, a *usage* is a statistical measure of use.

An alternative data collection method for electronic resource usage is the *search log*, which records similar data to that reported to COUNTER as well as additional information, such as records of actual patron database searches. Nicholas, Huntington, Dobrowolski, Rowlands, Hamid, and Panayiota (2005) feel that logs provide "abundant and fairly robust evidence of use" and can "tell us something about the kinds of people that use the services" by providing "a direct and immediately available record of what people have done: not what they say they might, or would, do; not what they were prompted to say, not what they thought they did" (p. 1445).

In some cases, electronic information resources are portrayed as offering users liberation from the physical library's inconvenient, decaying anachronism. According to Martell (2007), "the value of electronic resources may already have eclipsed that of physical resources" due to the "enormous" benefits they provide to users (p. 443). "Students no longer have to come to the library…for reserve readings…No more fumbling for hours through heaps of printed indexes". The "ease" with which government documents and legal resources can be accessed online make "the old days seem like a bad dream" (p. 443). In language suitable to a Philip K. Dick novel, Martell presents electronic resources and facilities as the future, speed, cleanliness…worldliness: "Quaint old microform equipment sits largely idle as users enjoy beautiful, high-density LCD screens and prints that sparkle on the page in color or black and white" (p. 443). For today's library user, "no longer limited by the time and space considerations of the physical library", "everything seems to be within reach in seconds" (p. 443). Rather than

lamenting the loss of patrons in the physical library, “librarians can be thankful for what the electronic world has provided to those who use our services” (p. 443).

In an attempt to improve conceptual understanding of electronic journal uses and users, Eason, Richardson, and Yu (2000) analyzed 22 months worth of e-journal search log files from an electronic journal aggregator service (SuperJournal). The authors classified users’ (comprised of faculty, undergraduate, graduate, and post-graduate students, and “other”) access behavior based on the range of journals consulted in terms of title and age; the frequency of use based on the number of sessions and the length of each session; the depth of use, measured by percentage of results consulted at the article citation, abstract, or full-text level; and the function of use: browsing electronic tables of contents, printing articles, and/or searching. This data was analyzed to create a taxonomy of user types: *enthusiastic*; *forced, regular*; *specialized*, *occasional*, and *restricted* users. Low-level users were classified as well: *lost* users, who began the project enthusiastically, then dropped off, *exploratory* users, who began somewhat tentatively, then dropped off, *tourists*, who used the service minimally, and *searchers*, whose only use activity on the service was searching.

The authors acknowledged that the nature of the service might have affected the outcome of the study—users were required to log-in with a password, and several of the respondents noted that they had access to the journals provided through SuperJournal through other means and frequently found themselves accessing them that way. In spite of this, the authors noted that it was “possible to see the influence of the tasks, status, and disciplines of users, the content, function and delivery” on the users’ behavior (p. 501).

Levine-Clark (2006) investigated the use of electronic books (*e-books*) among his university's constituents. Citing the usage statistics that are commonly supplied by vendors of such electronic projects, Levine-Clark noted that usage data supplied by e-book vendors indicates only "that electronic books are used" but not "how or why they are used" (p. 285). In order to gain more information about the usage of e-books, many of which, the author notes, are quite expensive for libraries to purchase, Levine-Clark surveyed patrons about e-book awareness as well as usage. In spite of this objective, the survey questions seem to have focused more on who was aware of and accessing e-books than why or how they were being used.

The extent of discussion of the nature of e-book usage seems to have been confined to whether the e-book was read online or if it was printed out first, and if it was read in its entirety or only partially. Unfortunately, *use* seems not to have been defined for Levine-Clark's respondents, though he does make some distinction between different types of use evident in his analysis, in which he references "the divergent needs of our users—the use of print resources for immersion in a text and the use of electronic resources for searching and information gathering" (p. 298).

Though Serotkin, Fitzgerald and Balough (2005) employed focus groups to study undergraduates' opinions about electronic journals. The researchers asked students about two types of electronic journal use: *accessing* or *downloading* journal articles ("Do you prefer using electronic journals or print journals?" p. 505) and the tasks to which the information contained within the e-journals were applied ("How did you use the journals purchased for this study?" p. 505). It is unclear if the two types of use being evaluated were made explicit to the respondents.

Tenopir and Read (2000) looked at statistics related to electronic database usage by public library patrons. They found that these resources experience predictable usage patterns, just as the physical library does. The authors supplemented analysis of usage statistics with a survey of librarians to inquire about efforts made to promote the databases to patrons and librarians' beliefs about patrons' reasons for selecting specific databases. Librarians believed that quality and content were patrons' two most important criteria for selecting a database, followed by convenience, ease of use, familiarity, and lack of other options. Patrons were not surveyed about their true motivators.

Efforts of standardizing agencies to contribute to the understanding of electronic journals user behavior has been significant, but it too is marred by conceptual confusion. Blecic, Fiscella, and Wiberley, Jr. (2007) described the International Coalition of Library Consortia's (ICOLC) application of terminology to describe different aspects of electronic journal usage:

> Understanding the possible meanings of the terms "sessions" and "searches" is essential when interpreting use statistics. The ICOLC guidelines recognized the terms as important measures of use. In 1998 and 2001, the guidelines did not define "session," but equated it to "logins." (p. 27).

Project COUNTER's efforts did not clarify this:

> In both its first and second releases, The COUNTER Code of Practice for Journals and Databases defined a session as "a successful request of an online service. It is one cycle of user activities that typically starts when a user connects to the service or database and ends by a terminating activity that is either explicit (by leaving the service through exit or logout) or implicit (timeout due to user inactivity)" (Ibid, p. 27).

The authors noted that if COUNTER requires any activity, such as a search, to have taken place during the measured session is unclear. One scenario for the "searchless session" is for a user to log-on to a database and not conduct a search before the

established time period for a session elapses, ending the connection to the database and requiring the user log on again (and start a new session) in order to conduct a search. The authors determined that COUNTER recommends a thirty-minute inactivity period before timeout, but this limit is not enforced. Additionally, in some cases institutional users (such as the university library providing access to its users through an institutional subscription) can customize the amount of time to elapse before a session is logged out due to inactivity. This can affect the number of individual sessions recorded.

Peters (2002) suggested "as the pendulum swings from physical library use to online use of libraries, we need to develop measurement and assessment methods to accurately portray how users are using the library", in part because "some of the basic 'natural laws of library and information science' may not apply as well or as consistently in the realm of electronic information discovery and use" (p. 45). Specifically, some early studies seemed to indicate that, for example, the 80/20 rule—by which twenty percent of the collection accounts for eighty percent of its use in terms of circulation and citation—may not hold true for electronic journals.

Nicholas and Huntington (2006) questioned the best way to measure the *actual use* of downloaded articles, which the authors called "the ultimate evidence of users [sic] satisfaction" (p. 49). Even though some aggregators and databases report high numbers of article downloads by users, "how do we know they actually read or consumed them?" The authors suggest that a large number of articles may be downloaded and saved for future "consumption" that may never occur. They also suggest that short articles are more likely to be downloaded and read on-screen, which would have an impact on *usage* as measured by the number of downloads (p. 50).

Although the LIS literature features regular assertions that there is much to be learned about patron use behavior from database statistics (Coombs, 2004; Peters, 2002; Jamali, Nicholas, and Huntington, 2005; Eason, et al., 2000), little is reported on this topic beyond information about the number and nature of database log ons and article downloads. Data about the most popular time of day, day of the week, or month of the year for logging on and downloading articles, and the disciplinary affiliation of users or location from which the patron accessed the database are not particularly illustrative. Hopefully in the future individuals who are interested in studying this type of resource use will improve methods and elicit more substantive data.

Measuring Citations to Evaluate Use

According to Wilson (1994), " The main strategy for determining what information has actually been used over the past fifty years has been citation analysis" (unpaged). Kurtz, et al., (2005) called *citation* "the primary bibliometric indicator of the usefulness of an academic article" (p. 1396). Citation differs from other measures of resource use in that it may serve purposes other than acknowledging the source of ideas and research that have been referenced. Sandstrom (1994) recognized two additional motivations for citation: *persuasion*, by indicating a preponderance of evidence, and *displaying allegiance* to a particular individual or school of thought (p. 422). Either of these reasons for citing a work certainly demonstrates its use, but these uses differ from those implied by the work having been checked out of the library. Garfield (1996) identified fifteen reasons to provide citations to other works:

1. Paying homage to pioneers
2. Giving credit for related work
3. Identifying methodology, equipment, etc.
4. Providing background reading
5. Correcting one's own work
6. Correcting the work of others
7. Criticizing previous work
8. Substantiating claims
9. Alerting researchers to forthcoming work
10. Providing leads to poorly disseminated, poorly indexed, or uncited work
11. Authenticating data and classes of fact—physical constants, etc.
12. Identifying original publications in which an idea or concept was discussed
13. Identifying the original publication describing an epynomic concept or term
14. Disclaiming work or ideas of others (negative claims)
15. Disputing priority claims of others (negative homage) (p. 451-2).

While many of these rationale for citing a work reflect a "use" of that work, several may not (e.g., "alerting researchers to forthcoming work"). To this list, Frost (1979) added two that are almost certainly not reflective of a use: those prompted by personal allegiances and ambitions, and citations that serve as "window dressing" to establish the author's scholarly *bona fides* or impress readers (p. 401). Frost added that *citation* not only reflects the use of a work, but is an action with various "motives, purposes, and functions [that] must be inferred from the context in which the citations appear" (p. 400). Peritz (1992) also noted that "citation of a study because of its connection with the subject matter of the citing paper may be qualitatively different from a citation indicating its *use* or *application*" and the two types of citation should be weighted differently in any type of assessment of citation (emphasis original, p. 449).

Hooten (1991) said that although citation is frequently treated as an "objective" activity and a measure of the quality of the cited work, it is, in fact, a highly subjective and variable activity that may serve different functions depending on the citing author, placement of the citation within the citing work, or the discipline within the citing work is

situated (p. 398). In fact, several taxonomies of usage as designated by citation have been developed (Murugesan & Moravcsik, 1978; Chubin & Moitra, 1975; Peritz, 1983). In their study of the citation behavior of economists, White and Wang (1997) found a variety of motivators both for and against citing. They found that citations actually underrepresented the volume of literature that was actually used; in many cases documents perceived to be of poor quality or of specific material types were not cited in spite of having contributed to the work (p. 147).

Equally problematic is the variety of methods with which citations can be assessed. It is possible to assess *raw use*, or the simple number of citations to a specific work, author, or journal; or to adjust for *impact* or *density of use* by considering the number of citations in the context of the total number of items available for citation. Adjusting for density of use, said Sandison, gives a more accurate depiction of the "heaviness of use" of a particular idea or item, while considering only raw use data can be "dangerously misleading" (p. 172). Though Peat (1981) advocated for examining citations in scholarly publications to assess use levels, she notes that citation does not account for consultation of numerous sources that are deemed, eventually, to be irrelevant. This, Peat acknowledged, is "very important use" of information resources, therefore, "any study that focuses on the published result will invariably understate use" (p. 231).

Use, *Citation, and Influence*

Measuring use in order to evaluate popularity of items is a phenomenon that is shadowed by related reasons for measuring use, particularly in the academic world.

Frequently, scholars are evaluated by the influence demonstrated by their work or ideas through the number and quality of citations to that work. In Coleman and Malone's (2006) consideration of the different measures that reflect use of journal articles in the digital world, the authors suggested that "if we think of citation as the only kind of use that counts, as the kind of use that has impact, we might miss another kind of use that matters" (p. 2). Specifically, the authors were suggesting that looking at statistics of electronic document access and transfer might contribute to the task of evaluating a journal's influence or importance. The authors compared citations in the *Web of Science* database to electronic usage statistics—that is, accessing and downloading individual articles—for an experimental body of articles from the *Journal of Education for Library and Information Science.* Although the *JELIS* articles had not been cited heavily, electronic usage statistics were quite high.

The problem with reading too much into these findings is, of course, that *accessing* an article is a different activity from *citing* the ideas within. Though the fact that these articles were accessed from 31 individual nations illustrates the web's capability to increase visibility, it does not guarantee increased impact or influence; it can be seen, in fact, as the electronic equivalent of checking out a book or removing a bound periodical from the shelf. Citation, on the other hand, represents a much more complex process than these transactional measures of use. The act of citing represents a different type of use; indeed, Vickery's (1969) experiment in ranking a list of journals on the basis of citation analysis and borrowing resulted in two different lists. Piternick (1979) also found that items that are checked out are frequently not the same items cited by the individual who checked them out. Kelland and Young (1994) referenced the scholar's

pursuit of information in books as described by Hayes: "looking up particular facts or other items in books, the references leading the researcher to further sources, a process that can lead to the consultation of original sources, without any formal charging out of books" (p. 82). This type of materials use, according to the authors, would be more accurately reflected by citation than by circulation records.

While Kelland and Young acknowledged that citation does not directly reflect the use of a single library's collection as circulation records do, because materials cited by an author may not actually be held by library of the author's home institution, the complex motives for citation can provide "more than the usual insight into the nature of library use" (p. 83). Citation evaluation illuminates the use of literature, ideas, and information in ways that other metrics of usage cannot. The nature of citation and, again, the *Matthew Effect*[9] also lends the study of citation behavior predictive power. Items that have been cited in the past are more likely to be cited again in the future.

Skepticism of Citation as an Indicator of Use

Although *The Normative Theory of Citation* holds that authors "give credit where credit is due" (Mac Roberts & Mac Roberts, 1987, p. 305). Authors frequently decline to cite works that have provided an influence because the subject matter is considered so rudimentary to the reader that citation is unnecessary. For that reason, Kelland and Young speculate that *influence* might substitute more readily for *use* than citation would; "a use is momentary, while an influence is permanent in that it can result in text references and/or citations for years to come" (p. 87). Unfortunately, studies have shown that influences are often cited incorrectly. For reasons not apparently tied to date of

[9] See p. 68 for an explanation of the Matthew Effect.

publication or any other discernable variable, the Mac Roberts (1987) found that though a direct citation is provided consistently for particular works, many individual works are only cited through a secondary source. Other works, they found, are either never cited or only cited rarely in spite of their clear influence on a particular piece of research (p. 305). Additionally, citations in scholarly literature tend to be of other works of scholarly literature, not practitioner- or lay-oriented or newsletter publications, which are certainly read.

Scales (1976) attempted to measure correlation between use of journals as indicated by citation and *actual use*, indicated in this case by circulation (p. 152). Finding little correlation between journals with high citation rankings and high actual use, Scales recommended against applying journal citation rankings to collection decisions (p. 155). While several notable information scientists (included B.C. Brookes) wrote to the Journal of Documentation to criticize Scales' paper, these criticisms were confined to her methodological and statistical models. None mentioned the conceptual problem of labeling circulation "actual use" and simply calling "citation" citation, as if no *use* of the material occurs in the process of citation.

While skepticism of employing citation as the sole and definitive measure of use is called for, several studies have found connections between circulation data and citation behavior when both measures are analyzed locally (Blecic, 1999; McCain & Bobick, 1981), or grouped by subject, language and/or scope (Stankus & Rice, 1982; Tsay, 1998). Nevertheless, some remain unconvinced, as evidenced by Nicholas, et al.'s (2005) statement that "citation studies reveal 'use' by authors, whereas library loans or downloads represent actual use by readers, and it is readers that libraries and digital

libraries principally target" (p. 1441). Though the veracity of that statement could certainly be disputed (which digital libraries?), and the significance of the quotations around "use" in reference to the type of use revealed in citations is unclear, the authors seem to be dismissing citation as a measurement of *actual use.*

Measuring Use *to Evaluate Services*

Studies of the use of specific services frequently follow the model employed by Dennison's (1999) investigation of chronological variances in quantity and difficulty of questions asked at a reference desk. Dennison discovered in comparing studies of patterns of reference transaction that each reflected a different picture of peak times of usage, leading to the conclusion that each library might have its own usage pattern, or that perhaps usage patterns vary over time (p. 159).

Clark and Benson (1985) recommended connecting measurements of individual reference inquiries with the patrons who made them, and with their other library uses. Doing so, said the authors, would have two beneficial outcomes: it would prevent the misperception that the concerns of a small group of individuals making multiple inquiries and requests reflected the desires of the general user population, and it would reveal whether reference inquiries led to other types of user behavior, like book borrowing. Verhoeven, Cooksey, and Hand (1996) provided another example of measuring multiple types of library use by individual patrons. In conjunction with a general survey of library visitors at Georgia State University, the authors asked for the affiliation of patrons who made inquiries at the reference desk. Although the general survey showed that only 10% of individuals who entered the library were not affiliated with the University, a full 25%

of those who asked questions at the reference desk were unaffiliated. According to the authors, this type of information could be helpful in support of requests for additional funding to support external users and to assist with adjusting staffing patterns.

In an attempt to go beyond numeric measurement of instances of use, Pomerantz and Luo (2006) conducted telephone interviews with users of a chat reference service two to three weeks after their participation in the service. The authors took this approach in order to better reflect what they identified as the three phases in the use of a service from a user's perspective: the user's motivations for using the service, the user's perception of the service itself upon use, and the long-term outcomes of use of the service.

Evaluating Non-Use

Some studies, such as that of Osiobe (1981), query constituents about the reasons they don't use a library or information resource. Although Osiobe's questionnaire-based study of reasons for *not* using the library was inexplicably distributed to people who were *entering* the library, it did call attention to an important antecedent of library and information resource use: *accessibility*. More than any other factor, Osiobe's respondents identified physical distance from their homes to the library as an impediment to more frequent use. Other important factors, the lack of which were identified as impediments to more frequent use, could be placed under an umbrella concept of *amenity*, or something that contributes to physical or material comfort (*Merriam-Webster Online Dictionary*, 2008). Patrons with this type of concern expressed a desire for additional and more comfortable seating and less noise in the library.

McNicol's (2004) examination of Britain's *Mass Observation Archive* [10] in order to find information about Britons' non-use of libraries found an emphasis on book borrowing as the main reason to use the library. Respondents speculated that people who did not use the library perhaps did not like reading, or had the financial means to purchase any book they wished to read. One respondent identified "a mixture of laziness and increased disposable income" as his reasons for no longer "using" the library. In his case, an improved ability to purchase the books he wished to read had afforded him freedom from having to visit the library in order to borrow and then return books (p. 84). Some respondents expressed sentiments that librarians might consider "library anxiety" as a reason for refraining from visiting the library, citing the "daunting" nature of seeking information or wanted materials in the library, or the "not particularly helpful" nature of library staff (p. 84).

Katz (1985) divided non-users into two groups: those who refrain from visiting the library because it is inconveniently located or they are just not interested, and those who lack the ability to read and "can't cope with books and magazines" (p. 375). Katz notes that in spite of the fact that the public library offers services and materials in addition to books and magazines, non-users "rarely understand that aspect of service" though librarians struggle to direct resources and services toward efforts aimed at attracting non-users while continuing to serve patrons who are more active users.

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[10] "The Mass Observation Archive specialises in material about everyday life in Britain. It contains papers generated by the original Mass Observation social research organisation (1937 to early 1950s), and newer material collected continuously since 1981" (Mass Observation Archive, http://www.massobs.org.uk/index.htm). The Archive contains essay-style contributions of Britons submitted in response to "requests for commentary on particular subjects" (Black, 2006, p. 440), including 1988 and 1999 directives regarding "Regular Pastimes" and "Public Libraries", respectively.

Some discussions of *non-use* of collections lend the non-circulating materials the character of a languishing invalid. Morse and Chen (1975) developed an approach—which they helpfully identified as *non-biased*—to sampling and analyzing circulation data for the purpose of determining "the effectiveness of a library in serving its users", and for application in collection development and management decisions (p. 179). This data, according to the authors, would provide more reliable justification for collections funding requests than the "librarian's mystique," which the authors consider to have lost its effectiveness to persuade budgeting agencies to "finance every hunger for complete collections" (p. 193). The authors also suggested that "remainder" "books that are much less often used, circulating but rarely—books that are out of date or are so specialized that they are used only occasionally by a few specialists" might be shelved in a separate location "to avoid diluting the active collection" of books that circulate with considerably more frequency (p. 192). The authors identified books that don't circulate at all as *inactive* (p. 187). According to Parker (1982), Chen went further in a later study, dividing collections into *living* (circulating) and *dead* (non-circulating). In his response to Morse and Chen, Bookstein (1975) described such items as Cinderella's Prince might have talked about her stepsisters: "such books sit on the shelves, accumulating storage costs, and interfere with the efficient interaction of users with books of value to them" (p. 195). In other words, books that circulate rarely or not at all are not benign; they cost the library money and get in the way of users trying to connect with the materials they really need.

For Hayes (1992), books that do not circulate are not merely in declining health, they're dead. From the acquisition date, he said, book use (as measured by circulation) declines, a process he calls *decay* (p. 366). The phenomenon of decay, or declining

circulation, is a common topic of discussion in the collection management literature. Interestingly, Britten and Webster's (1992) findings contradict the "common wisdom" of decay: in their analysis of characteristics of the most frequently circulated titles in each of the main LC classes (at the University of Tennessee-Knoxville,) they found that "titles remain well-used for many years after their publication, even outside the areas where this might be expected… in fact, it appears that…the hard sciences are less currency-oriented than many of the social sciences" (p. 243). Of course, the argument could be made that this is due to a stronger orientation toward journal literature in the sciences and the authors analyzed only monographic circulation records, but the data compelled the authors to say that "further study is needed before weeding older titles or instituting a collection policy that excludes the purchase of all but the most recently published titles" (p. 243).

It's sad to note that some examinations of non-use have an air of self flagellation, as seen in McGrath's (1985) discussion of the foundational concepts of collection evaluation: "We know that despite our best efforts, we do many things incorrectly or poorly. Why, for example, are less than half of the materials in so many libraries never used" (p. 245)?

Evaluation of Use *for Purposes of Predicting and Planning for Future Use or Demand*

Attempting to predict *use* of a library or information resource, or the information use behavior of a particular group of individuals, is perhaps a natural by-product of interest in explaining or measuring library use for evaluative purposes. Because use is so frequently relied upon as an evaluative tool, reliable methods for ascertaining which

patrons is most or least likely to take advantage of library or information resources, or which kind of resource or service is most likely to be successful could assist with marketing, measuring, and allocating resources for services.

The most common method of predicting *use* relies on measurement of past use, as in Dennison's (1999) statistical study of transactions at Winona State University Library's reference desk. The reference staff recorded reference transactions in seven categories (telephone inquiries about holdings, telephone ready reference requests, medium-difficulty in-person requests, etc.) and determined, on the basis of usage (or request difficulty) levels, hours when librarian-staffed reference service might be added. It is interesting to note that this study is situated entirely with the use made of the reference desk. Dennison does not explain the criteria for determining the difficulty level of an inquiry, and no attempt was made to record the affiliation status of the patrons asking questions. In spite of Dennison's having uncovered some interesting data, such as that some late evening hours demonstrated reference inquiries that were both high in number and in difficulty of query, the picture is incomplete without determining how this reflects the needs and usage patterns of specific types of patrons. For example, if a reference staff's schedule was shifted to accommodate the high number of difficult questions asked by undergraduate students in the late evening hours, would that diminish access to librarians with subject expertise during the daytime hours, when faculty might most need it?

Another common approach to predicting library or resource use is by assessing past use by communities with specific demographic characteristics and, in turn applying that data to forecast use by other, similarly composed communities. Parker and Paisley

(1965) examined the circulation and demographic data recorded in 1956 for 2,702 communities by the United States Office of Education's Library Services Branch. In addition to such measures as *educational level of adult male residents* and *mean family size*, the survey collected information about each community's per capita retail sales and television saturation. The authors found that high circulation rates correlated most strongly with a high education level for females. A highly educated female population was also the strongest predictor of circulation of adult materials, though a large general population was correlated with high fiction circulation, and high average income predicted high nonfiction circulation. From this analysis, the authors extrapolated that libraries in less affluent communities might not provide an adequate supply of nonfiction materials.

Hodowanec (1980) attempted to identify and prioritize the factors presented in the literature as having possible impact on the use of books and journals in an academic library. Hodowanec identifies the degree to which a collection circulates as its *utility* (p. 75). In an effort to predict the likely use (here defined as circulation of books and in-house examination of periodicals,) of library materials by discipline and user group type, Howodanec examined circulation records and shelf removal of materials by undergraduates, graduate students, and faculty, respectively, sub-divided by discipline. He found that collection size is only tied to high circulation in the case of faculty, that undergraduates use periodicals more frequently than graduate students, though faculty are the heaviest periodical users of the three groups. Departments with faculty that published heavily were no more likely to avail themselves of library resources than those who did not. In summary, Howodanec identified the most significant variables for explaining book

and periodical use, respectively, and concluded that “use is indeed a very elusive area of research. Even though one set of variables may effectively help to explain use, under a different set of circumstances other variables may be more important in explaining use” (p. 85).

Frequently, studies that are presented as *predicting* library use, instead offer *explanations* of past use that are manipulated to provide an untested model for predicting future use. Ottensmann (1995) determined out that basing predictions of use of an entirely new or substantially altered facility on past performance of similar facilities and services is impossible. To remedy this he developed a gravity model to predict his selected measure of use—circulation—of a new public library in Indiana, taking into account the population in the area to be served, the number of uses of existing library branches in the area, and the collection size of the new facility (p. 387). In a second study, Ottensmann adjusted the model to include the educational attainment and socioeconomic status of residents of the area to be served, and suggested adding another measure of library *attractiveness,* such as collection size, in order to better assess the draw of a new library.

Silverstein and Shieber (1996) presented a decision-tree model for determining which items might be sent to off-site storage to alleviate crowding of Harvard College Library. The authors acknowledged that past usage is difficult to measure given the variety of ways in which books are used, such as circulation, browsing, and reference, especially considering that comprehensive statistics can only be automatically accumulated for circulation (p. 267). Though they appreciated that using circulation statistics as a proxy for all book use is problematic, especially in certain disciplines, the authors cited past studies that found circulation to be an accurate predictor of overall book

use and suggested its application as one fork—along with other variables such as date and language of publication—in a decision tree for selecting books for off-site storage.

McGrath, Huntsinger, and Barber (1969) evaluated library materials needs of academic departments in order to develop an "objective, scientific technique for allocating funds for materials" (p. 52). The authors examined 22 variables related to faculty and student library use behavior, and faculty data such as average teaching load and number of years of employment at the university. Combining that data with the total cost of books available for purchase in each discipline, the authors performed a factor analysis and developed a formula for asset allocation.

Line and Sandison (1975) advocated for improved library use and citation studies for planning purposes. *Frequencies of use*, they argued, are not helpful metrics; assessments of the *density of use* for journal titles, in terms of subscription price, required shelf space, processing, storage, and access costs, would be far more helpful (p. 393-4).

Budd (1982) warned against basing collection management decisions on the "scant scholarship" of models developed with "poor testing procedures, misinterpretations of previous writings" (p. 280), and stressed that in order to predict future use, measures of past use must have some measure of comprehensiveness. Criticizing a recently published study of library use levels based of circulation, Budd said that making a judgment about withdrawing or adding monographic titles based on six months of circulation records is a poor idea as an academic researcher can easily monopolize a library's books on a particular subject for at least six months, then moving on either figuratively, in subject matter, or literally, to another institution.

Rees and Paisley (1968) analyzed data regarding media and information use by adults to determine which demographic and socioeconomic factors were most likely to be tied to, and therefore predict, the preferred channel of information and media access. The authors applied multivariate analysis to data gleaned from a telephone survey of 1294 respondents, assessing the importance of standard factors such as education level, age, and income as well as traits less common in library use surveys, such as the respondent's motivation for achievement and opinion about new media and educational technology. Respondents were asked about the frequency and recentness of their consultation of the public library, reference books, and other materials for information. The authors found that education level is the strongest predictor of public library use, while, interestingly, of the factors analyzed, openness to new media or technology most strongly predicted a respondent's likelihood to have consulted a reference book in the week prior to being surveyed.

Examining media use alongside library use is an uncommon but interesting approach. Zweizig (1975) found that book readers were frequently also library users. People who read newspapers were also found to more frequently be library users as well, although this was not the case for radio and television users, leading to the speculation that "the more the medium resembles traditional library materials, the more the use of that medium will relate to library use" (Zweizig & Dervin, 1977, p. 241).

Zweizig's (1973) conceptual model for predicting public library use represented "a major advance of the state of the art" (D'Elia, 1980, p. 413). His model of 29 individual variables related to library use include not only standard characteristics such as sex and education level, but additional measures to examine the relationship between the

individual and the library. Zweizig included questions designed to assess the respondent's opinion of the reliability of the library, knowledge of programs and services, and intensity of use as established by criteria such as number of services used and frequency of use. While praising the contribution of Zweizig's model, D'Elia further developed Zweizig's idea by identifying characteristics of individuals that were necessary *a priori* in order for the person to consider using the library.

Consumer and Other Economic Models for Predicting and Evaluating Use

Some efforts to evaluate *use* apply formulas and theories from economics and consumer-related research. Van House (1984) defined economics as the study of choices made in allocating resources among competing interests. The basic assumptions of the economist's paradigm (McKenzie, 1979) is that people will consider costs and benefits of expenditure of their resources in order to maximize their well-being. The concept of use is frequently invoked in studies that attempt to assess the cost-per-use of and costs of producing information resources or services, as well as benefits of their use to individuals and/or society at large. While asking patrons how much they would be willing to pay for a particular service seems strange, private industry does attach monetary value to information in the form of database subscriptions, journal subscriptions, monographs, and other tangible resources. Of course, libraries face costs for providing information services in the form of staffing and facilities maintenance expenses.

Fine (1984) commended library researchers and librarians for their willingness to learn from existing research and models of consumer behavior, saying that such work may be a crucial element in making libraries accessible and dynamic social institutions in

the community, though Fine did express concern that the models presented by this type of work are hampered by a lack of interest in the psychological factors that are involved in use (p. 444).

Braunstein (1979) examined of the costs and benefits of information acquired from library-based resources from both the perspective of the institution providing the resource, who must purchase, process, and provide access to it; and the information seeker, who must travel and lose time in order to access the information. Braunstein's research appeared at a time when there was very real consideration of charging fees to users; other studies also approached the problem of developing such a model. The difficulty with this, however, is the same of that of applying strictly quantitative measures to library or information use: it is impossible to estimate the benefits or value of a single piece of information to an individual beyond the cost of the information vessel itself. That is, if a librarian were to download an article from a library-subscribed database for a patron, he might be able to estimate that the cost of the journal article is a percentage of the total cost of the journal issue, if she were able to purchase it *à la carte*.

What if, however, the patron were to take the article home, but never read it? On the other hand, what if an idea in the article forms the basis for a patent that the patron develops with which she ends up earning millions of dollars? Does such a scenario change the article's worth? Braunstein presented the model as measuring the value of "the medium by which the information is contained" (p. 79) rather than information itself, but is that really possible? The information contained within the vessel: the book, journal article, or service, creates the demand for the vessel. If a library were filled with empty books, it's unlikely that there would be many patrons interested in reading them. Relying

on consumer behavior research for exemplars of predictive models to adapt to library behavior by necessity casts the patron in the role of the consumer of a good rather than a person seeking information.

Some studies approach the economic benefits of library and information resources from the standpoint of the user by weighing the cost to the user in such terms as time, effort, and travel against the value of the retrieved item or piece of information.

Goddard (1971) attempted to classify individual uses of the library in terms of their public and/or private benefit for the purpose of establishing priority for funding and found that "providing subsidies for essentially private use" (e.g., providing fiction for adults who could afford to purchase their own leisure reading materials) is an inefficient and irresponsible expenditure of the library's limited resources (p. 250). Goddard based his opinion both on the limited public benefit associated with such types of library use as well as his perception of the ill-advisement of public libraries competing with private sector services such as bookstores. Goddard identified *educational library use* as providing the greatest public benefit and suggested that public and school libraries pool their facilities, resources and services to provide the maximum public benefit.

Van House (1984) said that information resists economic analysis in part due to its unique nature as a commodity. Unlike a physical commodity, using information does not deplete its supply. Because information use is so contextual, its value is highly variable depending on the individual who "owns" it and the situation in question. Information can also have value to individuals other than those who possess it due to its potential to be applied to and assist with solving problems (e.g., research that leads to vaccine development). Van House noted that one of the major shortcomings of the application of

economic theory and research models to library and information use is the lack of "definition and measurement of library outputs" (p. 419).

Whitehall (1995) rejected *use* as a measure of value of a library on the basis that it's impossible to prove that each visit to the library results in some benefit to the patron. Similarly, it would be difficult to prove that the acquisition of information is always beneficial. Use, rather, is a "multiplier": more instances of use translate into more opportunities for the realization of benefits (p. 4).

Attempting to measure the value of information in economic terms presents a paradox: because information's value is realized in its use ("value-in-use"), the value of the outcome of that use is difficult to determine in advance. "It is not possible" said Fritz Machlup (1980),"to quantify the use made of any bit or piece of information" (p. 174). Repo (1989) stressed, however, that estimating the value to be acquired in the use of a piece of information is essential, as the "use or non-use of information is almost always decided on the expectations of individuals" (p. 81).

An example of applying the discursive formation of consumer studies to library evaluation is the LibQUAL+ Survey of academic library users, which is administered annually by the Association of Research Libraries (ARL). LibQUAL+, modeled on the SERVQUAL instrument for evaluating private sector customer service, operates on the premise that "*only* customers judge quality; all other judgments are essentially irrelevant" (Zeithaml, Parasuraman & Berry, 1990, p. 16). On the basis that customer perception is the only important measurement of performance, LibQUAL+ measures a library's performance "service gap": the disparity between patrons' expectations for quality service, and the service they consider themselves to have achieved.

Edgar (2006) underlined the disconnect between the mission of the library and the language of the market:

> To the extent that the student pays for library services through tuition or some other fee, he or she is a customer. However, to the extent that someone else—such as a parent, a taxpayer, or a donor to a university's endowment—pays for the student's library use, she or he is not a customer…faculty members are also usually not customers of a library since they do not pay to use the library but instead *are paid* to use it, so the costs of their use are covered by communities or funding agencies (p. 455).

Edgar also pointed out the dangers of LibQUAL+'s practice of measuring only short-term satisfaction. Faculty and students who have a negative experience with the library, he argued, are unlikely to stop their use of it. Academic libraries differ from businesses in that they contain resources that are essential to the work of members of a scholarly community, resources that individuals could not conceivably replicate on their own.

Hemmeter (2006) looked at the potential for library services being "crowded out" by those provided in chain, mass market bookstores. This phenomenon could have repercussions for public libraries "since libraries are largely funded based on their level of use. If patrons shift from library use to bookstore use, libraries may lose the means to meet the needs of some users" (p. 596). Hemmeter identifies multiple *uses* for the library that may be adopted by bookstores: community center and information source (if the bookstore offers programs and readings), library-as-place (if the bookstore is perceived to have a more appealing atmosphere than that of the library), library as book repository (if people decide they prefer to purchase and own books to checking them out). Other uses would not be affected, such as the use of the library for work-related information, due to the library's greater likelihood of maintaining a backfile of material.

Hemmeter lists several characteristics that indicate an individual's increased likelihood of using the library: proximity, the presence of children in the family, education, and income. He suggests that these characteristics also describe individuals or families most likely to be frequent bookstore users.

In Nozik's (1974) introduction to a stochastic model for predicting library service demand, the author discussed rational and non-rational techniques for prediction, citing intuition as an example of a non-rational technique, offering as further examples divination, prophecy, dreams, Tarot card reading, and the use of a crystal ball. Rational techniques, on the other hand, are grounded on more identifiable analytical processes such as the *Markov model*, in which past events or performance provide a rational basis for predicting future activity, and the technique of connecting variables with a specific outcome in either a causal or co-occurrent relationship (p. 4).

Using Line's (1974) definition of a *use* as what an individual actually uses as opposed to a *want* or *demand* (p. 7), Nozik looked to consumer research, specifically Bernoulli's mathematical formulas for predicting brand choice, to construct her predictive model. Recognizing that libraries, unlike schools, are non-coercive institutions, Nozik reasoned that library user (information gathering) behavior is analogous to consumer (purchasing) behavior because both involve acts of choice as well as consumption of products and services (p. 12). The *Library Demand Model* is based on the assumption that a past series of events or behavior patterns will repeat themselves in the future.

In rejecting concerns that applying such formulas to the prediction of use is too abstracted from the user, Nozik said that predicting the user patterns of many individuals

is a valid endeavor, and efforts at predicting use must be abstracted from the needs of an individual user in order to make such predictions.

As libraries attempt to provide user-centered service, and *information seeking and use* research pursues the user-centered agenda outlined by Zweizig and Dervin, predicting future use may be seen as contrary to these predictive pursuits. Raber (1995) discussed this tension and the implications of relying on predictions of use for staffing and resource allocation decisions in his discussion of the Public Library Development Program (PLDP). The PLDP was, in collective, several efforts on the part of the Public Library Association (PLA) to facilitate the strategic planning process for public libraries. The movement, which was highly influential, encouraged public libraries to select specific areas upon which to focus effort and resources. Under the PLDP model, libraries select priorities from a list of traditional library roles, such as becoming *the preschoolers' door to learning*, or providing a *formal education support center*. This approach was adopted gratefully by many public library administrators who found their budgets stretched thin and welcomed the chance to identify areas of service emphasis.

Raber observed that the PLDP's approach to predicting use equates use with the satisfaction of need, assumes that demand can be measured by use, and that what is not needed will not be used (p. 55). According to Raber the traditional objectives of the American public library, such as allowing its constituents to inform and enlighten themselves as a functional necessity for a democratic society, are at cross-purposes with the assessment, prediction, and prioritization of use required by the PLDP. Those that subscribe to the traditional view of the public library, Raber said, argue that the approach to planning proscribed by the PLDP conflates wants, needs, and demands. Library use as

measured statistically does not necessarily represent a community's library needs or reveal what a community wants from its library (p. 55).

This conflict represents a struggle over the identity of librarianship (p. 56). While the PLDP model implied that the primary activity of the librarian ought to be the analysis of library work and its effects upon users, traditionalists value the one-on-one, unique relationships librarians establish with users (p. 57). This fundamental epistemological schism leads PLDP adherents to value scientific, empirical measures of the use of the library by its community. Traditionalists, on the other hand, gather information about their communities, needs, and uses through deep experience with those communities.

Problems with Use *as an Evaluation Measure*

In the United States, the lack of understanding of *use* becomes particularly more problematic in the current environment of assessment and accountability facing libraries. As those responsible for providing funding to libraries become more focused on accountability and outcomes assessment and less interested in statistical measures of success, the need for a common language for discussing the contributions of libraries to their communities becomes all the more critical. Meanwhile, library services continue to change and diversify, particularly as they expand into the electronic environment. This expansion simultaneously multiplies the numbers and types of uses of the library and information resources while removing many of these uses from the physical space of the library, where they can more easily be observed by librarians, researchers, and administrators. As a result, researchers investigating remote library use are left with data

about number of log-ons and length of sessions logged on to specific databases, the virtual equivalent of door counts and circulation statistics.

Relying on “objective” use data (such as door counts) in order to evaluate the performance of a library or information resource has a number of problems, not the least of which is that “users use a variety of services for which there are no objective measures of performance” (D’Elia, 1983, p. 111). Indeed, concerns about extrapolating use data to provide an evaluation of a library at large are not new; according to Stieg, they were not new in 1942. Stieg’s (1942) concerns centered on what he saw as the “basic defect” of this type of analysis: that circulation data “is at best the study of one limited phase of library activity. The term ‘library use’ should probably be avoided because it has caused so much misunderstanding of the real nature and value of the studies that have been published” (p. 95). Hemmeter (2006) identifies four qualifiers for “use” in three studies: at least once in three months (Getz, 1980), at least once in the prior year (Lange, 1987/1988), and in the NHES data, a household is defined as using the library if the library was used in the previous month or the previous year (p. 601).

When data of this kind are applied to major decisions about collections, services, facilities, and resources, it is essential to understand exactly what is being measured. “Use of library materials” say Swigger and Wilkes (1991) “is a multi-faceted concept, and so should be the approaches taken to assess it” (p. 42). McGrath (1985) recognized one problem presented by focusing on measures such as circulation statistics: “use is seen as rationale instead of goal, evidence instead of mission. Development of “The Collection” with a capital ‘C,’ rather than service to the user, seems to be the primary mission” (p. 247). Clark (1982) identified another difficulty with relying on this type of data: the

existence of library “superpatrons” who account for a disproportionately large segment of these transactions. In situations where use measurement data such as circulation are applied to policy decisions, it’s important to remember, Clark says, that a library branch with high circulation may actually have a smaller number of patrons who check out books than a branch with lower circulation statistics.

Another problem presented by trying to fully understand the nature of *use* through static data such as circulation is that it is very difficult to determine *why* a book was checked out or a journal taken down from the shelf. Still, it is common for researchers to hypothesize explanations for the patterns they’ve uncovered. Metz and Litchfield (1988), for example, speculated that certain materials may be checked out while others are consulted at the library due to “difference in the information content of the materials themselves—novels will be checked out, amortization tables will not” (p. 505). The subject authors suggested that the patron’s interest might play a role, too. Because “common wisdom holds that scientists rely disproportionately on a more recent literature”, they might be expected to consult non-circulating journals more frequently than humanities scholars (p. 505). Though it may be true, without explanatory data this type of statement is merely speculative and not particularly helpful.

Britten and Webster’s (1992) study of the most frequently circulating titles in several LC classes from UTK’s library had the stated objective of letting “the books reveal the patterns of usage” as an alternative to interviewing or observing patrons on the scale necessary to “generate substantial data”. The authors’ intent was to analyze circulation data to “*infer* the characteristics patrons are seeking in the books they check out”, and prove the “hypothesis that there will be common characteristics among high-use

titles" (p. 239). While the authors did uncover some interesting data—works of and about Henrik Ibsen circulate frequently, as do works about deafness and sign language—they offered no context for these preferences. For example, if the authors had checked UTK's course catalog and discovered that a senior seminar on Ibsen had been offered, or that the school housed a large and active program in education for the deaf, this might offer a direction for information about circulation patterns. Unfortunately, this type of context is provided infrequently.

It is difficult to argue with Burns's (1978) observation that assessing library use is difficult in part because "use…does not always confine itself…it deals with the loosely structured, amorphous, ill-defined problems of the real world" (p. 9). While Burns was more liberal in his thinking about what constitutes library use than some of his colleagues, his statements still demonstrated ties to the importance of circulation statistics. "Book use as an activity is still the most valid measure of any item's worth to a library or information system, and second, use remains the primary criterion for retention" (p. 5). Because of this, he said, it is important for libraries to delineate goals for their collections. As libraries serve a preservation as well as current use function, the circulation of materials must be weighed against their possible future worth.

However, Burns did call for development of more descriptive measures of library use, encouraging soliciting patron input through a variety of methods, and stressing the importance of making the use study part of the "larger feedback loop" (p. 8). Zweizig (1977) advocated for demonstrating library effectiveness not through usage statistics, but by collecting and sharing information about the *uses* of services provided by the library to document "the functional contribution of the library in terms of impact" and its

"contribution to its supporting community" (p. 14). The problem with using statistics about community demographics to predict future use is the same as with applying such data to understand use in any context: "attributes are not the reason an individual may intersect with a library at a given point in time" (Dervin, 1977, p. 27). Rather, an individual seeks assistance, resources or services because these things are needed or wanted, not because she is a college-educated female with small children.

Despite changing contexts for library resources and services, more recent discussions in the literature seem to indicate that equating *library use* with *circulation* is an entrenched theme in the discourse of evaluation. In his report on the *Library as Place* for the Council on Library and Information Resources (CLIR), Freeman (2005) said "contrary to the predictions of diminishing use and eventual obsolescence of libraries, usage has expanded dramatically—sometimes doubling or even tripling" (p. 2). Questioning the validity of Freeman's statements, Martell (2007) responded that "the number of circulation transactions at Emory increased from 483,000 in 1995 to 575,000 in 2004. This is…far from the doubling or tripling suggested by Freeman" (p. 438).

It should be noted that though Freeman's failure to define *usage* makes him guilty of imprecision, he did not define it as *circulation*. In fact, Freeman followed the sentence Martell called into question by saying that "increases [in use] are particularly common at libraries and institutions that have worked with their architects and planners to anticipate the full impact of the integration of new information technologies throughout their facilities" (p. 2). This statement, and the reference to "Library as Place" in the paper's title, seem to indicate that Freeman was referring to *physical use* of the library in

conjunction with use of its resources. It is possible that these uses do not even include book circulation, a reasonable conclusion Martell completely overlooks.

Reliance on circulation statistics as a proxy for all types of use continues in public libraries as well, in spite of evidence that the uses patrons make of the public library are increasingly more diverse. Koontz, Jue, and Lance (2005) noted the danger of relying solely on circulation data to measure the usage of a public library, particularly for branches in impoverished neighborhoods where circulation levels have traditionally been lower (p. 30). In an effort to more fully represent usage behavior in these neighborhoods, Koontz and her colleagues developed a multi-dimensional framework for evaluating library use. In addition to circulation, measures included in-library use, instances of library assistance, and observed user activity. While the objective of the project is admirable, and though Koontz's team diversified the type of use statistic collected, the model lacks additional depth because it still counts only *instances* of use rather than explaining the *significance* of use of these libraries. In fact, the data acquired from the application of Koontz's model could have a deleterious effect on funding allocation decisions rather than preventing it from being "under funded or even closed" (p. 30). When presented with the information that library patrons in low-income neighborhoods are more likely to visit the library to surf the web than check out books, decision makers may not see "the value of services to residents of the library's neighborhood" (p. 49).

Because "the individual is the object of the library's concern," Clark and Benson (1985) questioned the logic of accumulating statistics through which "success or failure typically do not relate to the individual, [but] to a vast accumulation of individual acts" (p. 418). The authors called attention to the failure of logic associated with libraries'

traditional means of collecting and reporting usage data: “typically, we would report the data on questions asked and materials circulated only in terms of their numbers. We have no indication of how many individuals performed these acts either singly on a visit or in combination…yet, we attempt to approximate individual impact by converting our statistics into per capita rations” (p. 424). The authors observed that a large portion of the patrons in their study neither checked out any books nor asked reference questions, leading to two possibilities: either these patrons were visiting the library for other purposes or they sought information on their own, perhaps leaving without having found it. In terms of service provision, this is problematic.

Broadus (1980) also identified the problems with attempting to measure in-library use of materials. Doing so by observing patrons is difficult, and table studies are notoriously unreliable. In addition to the commonly agreed-upon lack of certainty that patrons will comply with requests to leave bound periodicals, for example, on a table after consulting them, Broadus observed that “lighting is a factor”, and “many different conditions help to determine the amount of use in the building, thus making such use hard to measure” (p. 323). Additionally, use studies, by their nature attempt to assess actual use, not the use of the ideal resource for the task at hand. In other words, the fact that a Pulitzer Prize-winning consideration of British maritime history is never be checked out doesn’t reduce the inherent quality of the information it contains.

Use *in Surveys*

> The term “use,” when applied to a contact with a book, has a variety of connotations. (Bookstein, 1982, p. 90)

If, as evidenced by the literature reviewed thus far, librarians, information professionals, and LIS researchers have difficulty comprehending the individual dimensions of the use concept, is it fair to expect patrons and information seekers to understand what is meant when they are asked about *use* in surveys, questionnaires, and interviews? A group of University of Chicago students in a Graduate Library School research methods class weren't, in fact, in agreement on what constitutes *using* the library. Bookstein (1982) found a wide variation among the students' (whom, he rightly mentioned, it would reasonable to believe would have a better understanding of the issues of both libraries and survey construction than most) understanding of what constitutes a use of a library or a book. While 47% considered *skimming a book—not finding it useful* to constitute an episode of "using" it, only 20% believed that *skimming the introduction only before determining that the book was irrelevant* could be considered a "use" (p. 89).

Bookstein's study had (and continues to have) serious repercussions for the use study methods. The fact that 91% of the respondents did not consider *consulting only the publishing information of a book* to be a use calls into question the validity of the "table study" method of measuring in-house use, especially if patrons are requested not to re-shelve books they've "used". If they don't consider what they've done to be a use of the book, might they re-shelve it so as not to disrupt the study?

From the responses, Bookstein concluded that "to many people, it seems that a book is 'used provided it turns out to be 'useful,' and that use involves extended, immediate reading of it" (p. 90). These conditions applied to almost every book and library use action on the survey. Multiple studies have replicated Bookstein's project, all

have uncovered the same lack of respondent agreement on what constitutes a library or book use (Kidston, 1985; Ercegovac, 1997).

This deficiency has likely had a great effect on the validity of data and concomitant knowledge we've been able to collect from use and user studies. Bookstein speculates that the breadth of activity under the *use* umbrella in "thousands of user studies" has contributed to the sum of "very little [knowledge] about how patrons behave in, and respond to, libraries" (p. 93). According to Julien and Duggan (2000), user response, either in the form of written survey (47%) or interview (11%) account for the largest proportion of use and user study research between 1984-1998 (p. 306).

D'Elia and Walsh's (1981) survey of Ramsey County (Minnesota) library users' satisfaction asked patrons to rate their satisfaction only with services or materials they use[d]. It also asked patrons to evaluate the library's physical arrangement for "ease of use" (p. 117). The authors found little or no correlation between level of satisfaction and level of use, as measured by visit frequency and duration, number and types of materials circulated, individual services used, reason for visit, leading to the conclusion that "either users use the library regardless of their opinions of the quality of library services, or conversely, the users' opinions of the quality of library services are not affected by their experiences of use" (p. 128). In light of Bookstein's (1982), Kidston's (1985), and Ercegovac's (1997) findings, one wonders if the concepts of services and materials use and ease-of-use were clear to the respondents.

In an attempt to establish a unit of measurement for library performance, Meier (1961) suggests the *item-use day*, by which a patron would be asked (presumably upon leaving the library) "how many items did you use today?" The meaning of *use* in this case

would be “whatever a person being served would fairly define as such” (p. 219). Powell, et al. (1984) surveyed teenagers about their reading and library use experiences, asking “when you were growing up, was there a period when you used a public or school library about 10 or more times a year?” with no indication of what is meant by *use* (p. 254).

“Whose Use?” *Use* in the User-Centered Discourse of LIS

For some LIS researchers, the late 1970’s brought a shift in the underlying assumptions of what, exactly, was worth focusing on in use-related research. Dervin (1977) was among those who began to call attention to the inherent confusion created by studying the use of the library from the perspective of the library. “Implicit in the focus on the measurement of library activities are a number of assumptions. The most obvious is that there is something of value to be obtained as a result of measuring library activities” (p. 16).

What, really, was to be gained by collecting statistics about book circulation? Why not focus instead on the user? A series of pieces by Brenda Dervin and Douglas Zweizig began a more in-depth discussion of the use concept and its relationship to the user. The ball that Zweizig and Dervin pushed in the late 1970’s continues rolling today: their 1977 article was mentioned in the 2002, the American Society for Information Science and Technology (ASIS&T) Annual Meeting program as having been the last thorough discussion of the concepts of *use* and *user*. “Public Library Use, Users, Uses: Advances in Knowledge of the Characteristics and Needs of the Adult Clientele of American Public Libraries,” discussed the shortcomings of the positivist, statistics-based nature of use and user studies prevalent at the time, asking if “the focus of these ‘user’

studies is, indeed, helpful" (p. 246). Concluding that these studies did little to enhance understanding of user needs, the panelists advocated instead for a more constructivist, situational, and user-centered approach to the study of library users and uses.

One result of this user-centric framework was removal of the information seeking and use process from the library and its re-situation with the user. Rather than the chicken-or-egg model of the purpose of using the library being library use, Zweizig and Dervin presented the idea that the purpose of using the library is instead the *user's* individual need-resolution process. That is, one does not go to the library just to go to the library, but one goes to the library *in order to satisfy a need that can be served by visiting the library*. In the authors' words,

> Once the question was, "How much use is made of the library?" Currently, the primary question is, "Who is the user of the library?" It is suggested here that the questions for the immediate future must be: "What uses are made of the library? What uses could be made of the library?" (p. 252)

Zweizig (1976) also observed that measures of library use were traditionally based on *input measures*, such as money spent on materials or hours of operation, which demonstrate only the potential for service. He advocated assessment of actual use, which would call for a change in conceptualization and methods. Zweizig outlined his conception of use, users, and uses and the differences between them:

- Use: transaction is unit of analysis (circulation, ILL, number of reference questions answered.) Asks: "How much is the library used?"
- User: individual is the unit of analysis. Asks "who is using the library?"
- Uses: "what is the library being used for?" Least studied: closest approximation is "user satisfaction" study (p. 7).

Such a seemingly simple shift in thinking presented an entirely new lens for viewing and understanding library use. While the statistics-based, "How much use is made of the library?" studies continued (and continue) to be conducted, other researchers

began to examine library use in a more user-centered framework. The influence of Zweizig and Dervin's approach continues: Dalrymple (2002) found 83 articles that cited Zweizig's 1976 and his and Dervin's 1977 articles in the years between 1977 and the year 2000.

Studies that focus not on the resource but on the behavior and needs of the resource's user are frequently referred to as *user studies* to distinguish them from the resource-oriented *use study*. Van Lill (2001) described two basic bodies of research under the user studies umbrella: theoretical discussions of the nature of use and the user's various motivations, and empirical studies of use that employ and reflect little of the theoretical progress of the former, a situation van Lill considered to have been created by the lack of an integrated view and a conceptual framework for studying users, information needs and information use (unpaged). In his extensive review of user study-related literature, Geoffrey Ford (1973) wrote that "it is deceptively easy to describe information use, and many researchers have taken the easy road" (p. 86).

Studying the Use *of Specific User Groups*

User behavior-focused research in this tradition, the beginnings of which Wilson (1999) and others trace to the Royal Society Scientific Information Conference of 1948, takes the view that "users are the raison d'être of information services" (van Lill, 2001, unpaged). Many of the early studies of information use focused, like those presented at the RSSIC by Bernal and Urquhart, respectively, on the information use of scientists. Siatri (1999) suggested that this may be due to earlier development of sophisticated information search and organization tools in the sciences than in other, humanities-based

disciplines. Early studies in the information use behavior of chemists (Maizell, 1957; Ackoff & Halbert, 1958); nuclear scientists (Fishenden, 1959), and other scientists (Glass and Norwood, 1959) employed a variety of methods such as surveys, interviews, participant observation and diary keeping. Similar studies in the 1960s expanded examination of the information seeking and use behavior of groups outside the natural sciences, including geographers (Garvey, 1967), psychologists (Garvey & Griffith, 1964), and Line's (1971) wide-ranging study of social scientists in government employ, INFROSS. Line conducted his three-stage study, which consisted of questionnaires, interviews, and observation, over a four-year period.

Wood (1971) noted that wide-ranging studies of the ways in which particular populations of individuals (e.g., scientists, homemakers, or factory workers) seek and use information must usually rely on questionnaires as a means of collecting data. This approach “rarely allow[s] one to obtain more than a very general picture of the information gathering process” (p. 13). Studies with more potential for nuance focus on the use of a specific information transfer channel—such as professional journals—by a given population. In his review of user studies published from 1965 to 1970, Wood called attention to studies that point to the professional or scholarly role or responsibility of the information seeker being closely related to their preferred use of information transfer channel. This is especially evident in differences between reliance on informal channels, such as discussion with colleagues, versus use of formal channels, such as published reports.

Convenience was also identified as a major contributor to the likelihood of an information channel being used. Wood cited Rosenberg’s (1967) study of industrial

personnel's opinions about and preferences for information gathering approaches, in which respondents were asked to rank eight approaches to finding information (such as speaking with a colleague or visiting a local library) first by perception of information quality provided and then by their likeliness to use each. In spite of having been rated seventh (of eight) in terms of information quality, the information source most likely to be used was the respondent's personal library, followed by material housed in the building in which the respondent worked. Even though the respondents were aware of the lesser quality of information their personal libraries were likely to provide, they were still most likely to avail themselves of that which was (presumably) most convenient to them.

Wood reviewed another study that revealed that the choice of information channel used was dependent on project phase and likely to change as a project progressed. For example, Wood cites an American Psychological Association study that found oral communication between information seekers to be a more frequently used information transfer channel during specific stages of a project.

Adkins and Hussey's (2006) presentation of an ethnographic study of the role of the library in the lives of several Latino college students rendered an interesting portrait of the relationship between the nature of an individual's library use and the type of library being used. The students who were interviewed saw the role of the academic library as supporting their schoolwork by providing information and study space. The public library, on the other hand, was identified by several respondents as providing materials, services, and programming that was reflective of their Latino heritage.

Hiatt's (1965) discussion of the efforts of two Baltimore branch libraries to attract adult patrons "of low education" (p. 81) provided another example of multiple library

uses by one individual. In it, Hiatt relates how one patron came to "use" his local branch library:

> He had been 'using' another branch for four years; that is, he has two children who…were told by their teacher to use the public library. He started taking them to his neighborhood branch. 'I used to bring them to the library and wait'…it never occurred to him to use the library himself (p. 88).

Hiatt speculated, "this might have remained his level of library use indefinitely" (p. 88). The turning point, after which the man in question began to borrow books to assist him with classes he taught at his church, came when he attended a library-sponsored program. Because the man checked his books out from a different branch than that to which he took his children, Hiatt observed that "he uses his neighborhood branch in his role as mentor—taking his children to the library—and [the other] branch in his avocational role as church leader" (p. 89).

Peil (1963) took a similar approach to her study of the use of public libraries by low-income Chicago families. Though she never defined what is meant by *use*, and whether the term was defined for respondents is unclear, Peil indicated that "for some respondents, *use* meant taking her children to the library or using her husband's card, so it did not necessitate having a card of her own" (p. 329). Peil's research also showed that library-using mothers read more, bought more books for their children (p. 330), were better-educated (p. 331), and had children who used the library more frequently (p. 332).

Stieg (1942) examined the library circulation records of the freshman, sophomore, junior, and senior classes of "Hamilton [College] Men" for two years in order to determine any general trends in borrowing behavior. Examining the Hamilton data alongside data from similar studies collected at other universities, Stieg was able to determine that students borrowed more books during the second semester, and borrowed

incrementally more books each year of college, even as the proportion of curricular-oriented materials to non-curricular (or leisure) materials increased. One of Stieg's most important comments regarded the relationship between heavy book borrowing behavior and high grades. "The number of books a student borrows and his use of the library are by no means the same thing. The important factor probably is…the effect that the reading of those books has upon him" (p. 105-6). This is a point well taken; unfortunately, studies attempting to correlate some measure of library "use" with the types of grades a student achieves are still common. Meier (1961) discussed the difficulty with relying on such outcomes of library use for evaluation: "the knowledge that people wish to extract from a library almost always yields deferred returns. Often years go by before the information acquired can be put to productive use" (p. 227).

Approaches to Use *in the Life of the User*

Cognitive and Affective Approaches

Savolainen (2007) defined the cognitive viewpoint in human-information research as "focusing fundamentally on the individual and on understanding the way that each person thinks or behaves in response to information needs" (p. 118). Fine (1984) called attention to the fundamental difference between this type of inquiry—commonly referred to as a study of *Information Behavior*—and more library-centric user studies: "behavioral research in librarianship reflects and reports the way the community currently uses—or doesn't use—libraries. It does not deal with the essence of library service, the way human beings process and use information" (p. 445). "The primary factor that determines a

research study as psychological is in the nature of the question. A study that asks who? or what? who uses libraries? or what materials do they use? is not psychological research" (p. 449).

How does one study use from the cognitive perspective, then? Fine (1984) suggested shifting from "what" and "who" questions to examining the need for information and the means through which individuals seek, acquire, and absorb it in order to satisfy those needs (p. 449). A major impediment to this type of study, according to Fine, is the survey instrument that asks library visitors to select a *use* or *uses* for the library during a recent or typical visit, because asking an information seeker to fit underlying and unfulfilled needs into the existing structure of systems and services only serves to continue the business-as-usual operations-centered approach for the library (p. 449). Having moved beyond the focus on how people get, have, or use information; we need to better understand the complexity behind the ways in which people interact with and react to information (p. 458). To accomplish this, Fine outlined the three broad questions to be addressed in forming a meaningful theory of user behavior within the library context, two of which directly involve use. After answering the question that seems to frequently central to LIS, what is information, Fine suggested examining users' actual pursuit of information in the form of library services, activities, and facilities. In short, how and why do information seekers choose to use the library in their quest to satisfy their need for information? Third, how can information providers more effectively package information to facilitate its actual use by those who need it?

As an alternative to the survey, Fine reaffirmed previous calls to employ experimental methods in library and information use studies, an approach she says is

taken only very infrequently. Once we've determined, for example, that women use libraries more often than men, Fine asks, what is the next step? Should library managers increase their offerings for female users in order to increase the satisfaction of their core constituency, or add materials or services to entice new male users? Might it be better still to further the investigation from the perspective of psychological research by asking *why* women use libraries more often than men, or how women's information seeking approaches might differ from men's, and how those differences are reflected in library use? (p. 456). One impediment to broader adoption of such studies is the emphasis in communities of practice-based research, such as librarianship, on generalizability and statistical representativeness. Fine argues that in human behavior research, it is sometimes the anomaly that provides information and insight (p. 457).

Julien and Duggan (2000) found a relatively small percentage of the information seeking and use literature they analyzed to be concerned with cognitive aspects of information use; only 20%, or 91 of 300 articles published between 1984-1998 (p. 297).

The cognitive viewpoint is not accepted unilaterally by the LIS community. Savolainen (2007) noted that some LIS researchers are concerned about the representative meaning of the phrase *information behavior* to describe the spectrum of human interaction with information due and its emphasis on the actions and motives of individuals. Some of those who question the information behavior/cognitive framework instead support a social constructivist conception of the ways that humans interact with information that is referred to as *information practice*. This perspective is especially relevant in discussions of the collective relationship of information to communities of practice, such as scholarly communities. *Practice* has the added benefit of being

observable, while cognitive processes are, largely, not. In short, interaction with information within the discursive formation of information behavior, or the cognitive viewpoint, is “triggered by needs and motives” while an information practice, or social constructivist perspective “accentuates the continuity and habitualization of activities affected and shaped by social and cultural factors” (p. 126).

Others have called attention to the other aspects of human experience and their relationship to information seeking and use. Wilson (1994) modeled information seeking “to be some more basic need in the individual, drawing particular attention to the fact that information could be used to aid the satisfaction of affective (or emotional) needs, rather than only cognitive needs” (¶79). Julien and Duggan (2000) found that a larger percentage (32%) of the information seeking and use studies they reviewed addressed the affective aspects of information seeking and use than those concerned with cognitive issues (20%) (p. 297).

Looking at an applied setting for information seeking, Antell (2004) investigated the phenomenon of college students who “use public libraries for their college assignments” rather than their academic institution’s library. Antell noted that the public librarians, wanting to provide quality service, frequently felt compelled to send the students back to their academic library due to its superior ability to support the educational objectives of their coursework. However, Antell found that appropriate information was often not the primary need that prompted students’ use of the public library; several affective issues precipitated this use as well, including greater familiarity and comfort with the public library. One of the most common reasons given for visiting the public library was *ease of use*. Antell notes that this theme is often discussed in the

context of “finding” things, as in “it’s easier to find stuff [at the public library]” (p. 231). What stuff for what purpose? Antell doesn’t say.

In fact, though Antell asked the students several questions about their use of both libraries, what she and the student respondents meant by *use* is unclear in the article. For example, the stated reason “I'm an education major, so I use a lot of children's books, and the public library has more of those” may refer to circulation, coding for meaning, assembling bibliographies on specific topics, or myriad other reasons (p. 230). This is a shortcoming in an otherwise provocative and valuable study.

The User’s Use *in Other Information Discourses*

Other models of information seeking and use seem to focus on a more holistic concept of the information seeker. Sandstrom (1994) applies optimal foraging theory from evolutionary behavioral research to explain information seeking and use. The model Sandstrom set forward compares the information seeking process and behavior related to assembling an information “diet” to the sustenance-seeking behavior of foragers. While this model provides a unique metaphorical perspective on the information seeking, selection, and use of any group or individual. However, it seems particularly well suited to the activities of scholars and researchers because the information activities that support scholarly research are relatively easy to observe, constitute a more concise list than the information activities associated with one’s life in total, and because information is seen as the lifeblood and sustenance of scholarly research.

In this model, the analogous stage in the information process to *use* is called *handling*: “the time to capture, process, and consume the resource” (p. 425). Optimal

foraging theory ranks dietary items according to the consumer's "chosen cost-benefit currency" per handling time for each unit. The consumer's diet will be "specialized and narrower when high-ranking resources are frequently available and more generalized and broader when such high-ranking resources are scarce" (p. 426). Sandstrom extends this metaphor to the scholar's information consumption behavior. "Information resources that are both easily searched and handled (such as the current, core journals in the reader's native language) will likely complete a relatively narrow optimal consumption mix", accompanied by a smaller number resources that are either easy to search/difficult to handle or difficult to search/easy to handle (p. 428). The *Invisible College* can be seen to represent aspects of both ease of access and handling of scholarly information resources. Invisible colleges are "small societies of everybody who is anybody in each little particular specialty" (de Solla Price, 1993, p. 126-7) who communicate with each other about research. This direct delivery system for information significantly reduces the search difficulty described by Sandstrom. Similarly, the incentives for being part of "everybody who is anybody" through membership in an invisible college can be seen as replicating evolutionary motivators for identifying oneself with the strongest and best individuals in foraging behavior.

Patch Choice is another aspect of the optimal foraging model, and refers to the forager's propensity to confine the search to a specific geographic *patch* to the extent that the returns from doing so are acceptable. Sandstrom compared the decisions made by a forager to move away from a geographic area in which stock is depleted or of low quality to the scholar's analysis of the costs of expending "the efforts and skills required to exploit the library's complex organizing schemes…in comparison to more easily

exploited personal collections, informal communication, or citation chaining through reading" (p. 434).

Powell (1984) observed a wide disparity in the "library use levels"—both for educational and recreational purposes—of college students and wondered what might account for the variation. Acknowledging the problems inherent with "focusing on descriptive factors rather than causal factors" of library users, Powell sought to investigate new variables for connection (p. 179). In addition to the well-trod landscape of demographic variables such as income, educational level, and race and their relationship to library use, Powell reminded us that library use has been correlated with media use, achievement motivation (Zweizig & Dervin, 1977), open-mindedness (Zweizig, 1973), physical activity level (Bolton, 1982), community activism and liberalism (Madden, 1979) (p. 181). While some authors had looked at psychological factors as related to information seeking (Rees & Paisley, 1968), personality had not yet been examined as a factor that might contribute to likelihood of library use.

Powell selected *locus of control*, or an individual's tendency to seek rewards for behavior internally or externally as the independent variable to study, and hypothesized that students who were more internally motivated, or less likely to seek rewards externally, would be heavier library users. After asking about several types of book borrowing, reference service consultation, and LP record listening as measures of library service and administering a personality scale, he found no real correlation between students' internal or external reward motivation and level of use of those services. The strongest correlation was between heavy library use as college students and respondents' having become library users at an early age.

D'Elia's (1980) study of characteristics that indicate a predisposition for using public libraries demonstrates one of the difficulties with the vagueness of the use concept as applied in research. Two of his measures—*frequency of use* and *intensity of use*—are not uncommon ones in the user study literature, the difficulty lies in their measurement. D'Elia's idea of intense use is tied to the number of items borrowed per trip, the amount of time spend in the library on an average trip, and the importance of library use to the respondent. These factors differ from other researchers' models of intense use, and they are exceedingly vague on their face. Not surprisingly, the results of D'Elia's study are somewhat vague; he identifies "two distinct types of library use", *Type 1* (*Intense Use)* is characterized by frequent visits, use of services, circulation of materials and a perception of library use as important, but not with telephoning the library or spending long periods of time per visit. *Type 2* (*In-house Use*) is distinguished by somewhat frequent visits of longer duration that involve some use of services, but not with telephoning or checking out materials. The Type 2 user places minimal importance on these activities. D'Elia notes that Type 2 users tend to be young, male, childless, users of non-public libraries, and involved in adult education, leading to the speculation that "this type of use might be for personal study or research related to formal education or work-related activities" (p. 428). While this is an interesting possibility, this project seems to have required far too much effort to only yield this tenuous conclusion. D'Elia does contribute to the understanding of user behavior with his interpretation of *hard-core non-users*, and *potential users*—those individuals who share characteristics with public library users but do not, as yet, use the library.

Use *in the Life of the Scholar*

Menzel's (1969) review of studies of information needs and/or use studies in science and technology was among the chapters in the first volume of the Annual Review of Information Science and Technology (ARIST). These reviews, which appeared in several subsequent volumes as well, represent some of the best-known and most influential examinations of information seeking and use behavior from the user's perspective.

In outlining the criteria for inclusion in the first group of publications included in the review, Menzel said "for inclusion in this field the basic data of a study must refer to *what is actually going on in the course of scientific and technological activity*" (Emphasis original, Menzel, 1969, p. 43). This excluded "records of the contents, circulation, subscription, and readership of literature…unless linked to utilization or performance data (for what these studies describe does not go on in the course of scientific and technological activity)" (p. 43). Menzel (1969) identified several classifications of use study: c*hannel studies* focus on one medium, such as the journal article, as a means of disseminating information. These are, by nature, centered with the medium. Other studies focus on the information seekers and users themselves: *failure* or *near-miss studies*; attempts to connect specific information channels to corresponding phases of research or criteria of success; and *critical incident studies*, which present the scientist's use of information to address a specific problem.

Of these categories of study, the critical incident study offers the most intriguing examination of the actual use of information in the solution of problems. Menzel described one study that asked scientists to recall their most recently completed task and

identify “chunks” of information that they applied along the way. They were then asked about the nature of the information: how much was desired, sources, how much was used, and the outcome. A related study explored the role of information use in the solution of problems as recorded for MIT’s “Solution Development Record”. For this project, scientists were asked to track the outcomes of information use and the potential of the solution to contribute to further study.

Menzel also reviewed studies of scientists in the role of disseminator of information. One of these studies found that 25% of conference presenters queried planned to revise their work significantly based on feedback received during the presentation.

Duff and Johnson (2002) chose to look at the use of a specific type of information seeker in a specific type of information agency in their examination of the ways in which historians use archives for research. The authors were able to identify four distinct information activities in this context. As perhaps expected, the historians said that they used archives to locate known materials, develop contextual knowledge around their object of study, and identify relevant materials of which they didn’t have prior knowledge.

More interesting, however, was the discovery that historians frequently find themselves overwhelmed upon beginning to use a new archives facility, and turn to the finding aids[11] in order to become oriented to the “whole, or ‘geography’” of the collection (p. 481). This examination of the findings aids may not lead them to the information they came to the archives to find, but the activity performs a specific and needed function.

[11] ODLIS defines “finding aid” as “a published or unpublished guide, inventory, index, register, calendar, list, or other system for retrieving archival primary source materials that provides more detailed description of each item than is customary in a library catalog record” (ODLIS, unpaged).

Antell and Engel (2006) surveyed faculty and doctoral students regarding their attitudes about the physical space of the academic library in the age of online databases and other resources. Although the authors were not surprised that their older respondents gave higher ratings than their younger counterparts to activities associated with locating information within the physical library while younger scholars valued electronic resources, younger scholars surprised the authors by demonstrating that they place high value on the library as a place conducive to scholarship, reporting much higher numbers and longer duration of physical visits to the library, during which they, presumably, did not utilize informational resources. The authors speculate that this may be akin to the undergraduates fleeing the "noisy dorm atmosphere" for the quiet, scholarly atmosphere of the library (p. 553). While the authors refrain from hypothesizing about why younger scholars might be more likely to "escape" to the physical space of the library in order to work, a likely reason is that faculty with fewer years in their appointment are more likely to be facing tenure and promotion pressure and need uninterrupted time to apply themselves to research and writing.

Use *in the Life of the User: Antecedents*

The precursor or determinant of use most frequently identified in this context is *need* (Westbrook, 1993, p. 546; Line, 1971). *Use* can also be seen as part of the sense-making process described by Dervin (1992), which identifies the precipitating factors of an instance of seeking and using information. In Dervin's model, an information need, which is situational, creates a gap in the information seeker's reality. Information use can be seen as a component of the bridging, or sense-making process Wilson (1994) called for

an integrative model of information need, information seeking behavior and information use based on Dervin's Sense-making model. Depending upon the model of the information seeking process in question, a *need* is frequently created by a *problem* or *task* (Dervin's gap). Belkin (1982) refers to this problem or task as the user's attempt to rectify an anomalous state of knowledge (ASK). In Belkin's ASK model, information seeking (and use) is preceded by this problematic cognitive state rather than a specific problem. The role of the user and his or her relationship to the needed information is highly dependent on the situation in question.

Need can be a slippery concept to hold on to. Crawford (1981) acknowledged that "if a user could specify what is needed under defined condition, his problem might be well on its way toward solution" (p. 62). *Demand* or *preference* may be easier to understand. Savolainen (2007) identifies need as a "basic category of behavioral research" (p. 114). It's also difficult to measure a stimulus such as a need; as a result, the question of "how to characterize 'cognitive dimensions of information behavior' remained unsolved" (p. 114). Fine (1984) questions the assumption that "a need impels [the information seeker] to the library: what about the need that cannot be articulated? Is it then not a need from the perspective of the library?" (p. 447).

Advocating for the adoption of a psychological approach to the study of user behavior, Fine (1984) outlined three broad and basic questions that need to be addressed in order to evolve a theory of user behavior, two of which directly address the issue of use in the life of the user:

> Once researchers have a better understanding of the nature of information and the ways in which humans identify gaps in their internal stores of information, and then assimilate new pieces of information in order to fill those gaps, we can attempt to understand the channels through which users are most likely to seek

> information, which information resources, services, or library facilities are most used and why? Third, we must improve our understanding of how information professionals packaging and transmission of information is truly relevant to the way people can receive and use it (p. 447-8).

In some discussions of use in the life of the user, the anteceding factors referred to are *skills* rather than needs. One of the earliest discussions of the ways in which users do or should use the library and its resources relates to a large-scale examination of high school and undergraduate college students' library skills. In developing the tests, Reed (1938) consulted reference librarians and Graduate Library School faculty at the University of Chicago to develop a list of the "traits and skills necessary for successful utilization of library resources and to evaluate in terms of personal experience the usefulness of the instruction they had received in the use of the library" (p. 238). Among the skills identified were knowledge of a library's departments and the concomitant materials and services each provides, use of the catalog in order to locate known items, items by specific authors, and items related to specific subjects; use of various tools to find subject related materials in books, magazines, and newspapers, and the ability to ascertain the most relevant and authoritative materials on specific topics. Also determined by librarians and faculty to be an essential library-related skill was the "ability to use library material without infringing on the rights of others" (p. 239). It is unclear whether this refers to the legal use of copyrighted material.

Use *in the Life of the User: Outcomes*

How would outcomes of use differ when the term is looked at from the perspective of the user rather than that of the resource or the information provider?

Pomerantz and Luo (2007) defined information use as "the real life utility value of information for the user" (p. 354), citing Ahituv's (1980) *realistic value* approach to the valuing of information. Specifically, this perspective measures the real impact of information based on the outcomes of actions, performance, and decisions before and after the user's receipt of information. For example, assessing the likelihood of a patient to take a prescription drug before and after being told of the health risks of the drug would provide a realistic value for the information about the drug's dangers. Unfortunately, studies of the actual use of information are far less common than studies of the process of seeking information (McGregor & Williamson, 2005, p, 498).

Applegate's (1993) discussion of methods of measuring user satisfaction and the difference between *material satisfaction* and *emotional satisfaction* identified *use* as a component of material satisfaction. In other words, if a search or service leads to information or resources that are used, the seeker's material needs are satisfied. Emotional satisfaction, on the other hand, refers to the affective dimensions of the experience: if in a library, was the librarian helpful? The search interface on the OPAC intimidating? Searching for books in the stacks frustrating? It's entirely possible to have a positive material outcome and a poor emotional outcome.

Problems with Use *in the Life of the User*

Not all attempts to situate use with the user as the unit of analysis are successful. Many ostensible examinations of use of information by individuals are, on closer inspection, little more than repackaging of usage statistics—such as circulation or number of library visits—by demographic criteria. These studies are frequently undertaken to

determine how, for example, women over the age of seventy use the library or the Internet in order to improve services provided to this group. This, says Dervin (1977), is "a normative response attempting to correct the damages of a normative approach" that assumes that all women over seventy have the same needs, concerns, skills, and desires, and in which "the situation is treated as irrelevant to the individual" (p. 19). In this model, "How much library use?" remains the fundamental question being asked (Zweizig & Dervin, 1977, p. 235).

Van Lill (2001) described that pitfalls associated with relying on such information; individuals can simultaneously or sequentially be members of several different groups, and the variables involved can create an infinite number of user group categories and subcategories. This type of study is, nevertheless, quite common; most of the user-oriented research regarding library use seems to fall back on the perceived predictive quality of what have been referred to as *life-style* (education, other media use) and *life-cycle* (age, presence of children in the home) variables and demographic characteristics.

An interesting strain of this literature could be called "*Measurement of* Use *in the Evaluation of the User*." Frequently, studies attempt to correlate library use (variously defined) with other hobbies, interests, and cultural qualities of patrons who use libraries. According to Smith's (1999) review of library use studies, findings from research conducted in the mid-twentieth century are still applicable: few people use public libraries, a smaller group of whom account for most of the borrowing; library users are more likely to be well-educated, have diverse leisure interests, and purchase more books

than non-users. Even those who do use libraries, however, don't escape his notice, since libraries are "used for leisure, not to pursue enlightenment" (p. 302).

Connections like these give the impression that rather than being correlated with signifiers of high quality of character, one's likelihood to "use" the public library (whatever that refers to in the study in question) may even be *determined* by one's character and station in life. Smith went so far as to say that "library use is determined by education" (p. 302), as if it's impossible to become a borrower of library books without first augmenting one's level of formal education, he said that "increasing the average terminal education age is the best way to increase public library use" in a community (p. 311). He also suggested that a "halo effect" may have led his respondents to indicate that they were library users when, in fact, they were not: "when surveyed people overstate their participation in a cultural activity such as library use, just as they exaggerate their voting in elections or likely visits to museums" (p. 304). Smith refers to people whose library memberships have expired are referred to as "lapsed members" and concludes his discussion of "library use and social class" by saying

> Educated, middle class people make more use of libraries because they are better able to do so. Libraries do not change the social situation, they reinforce it. Those whom the library service was established to help the most, appear to make the least use of it (p. 306).

Throughout Smith's review there is little to no discussion of what *use* actually means in the studies he reviewed. Occasionally, he mentions that use is measured by circulation in a particular study he's discussing, but he seems untroubled by the fact that these studies may each have defined use differently, or that the respondents (as most of the studies seem to have been based on self-reporting through surveys or interviews) each defined use differently.

A similar category of study attempts to connect library or information use with other, non-demographic qualities. For example, de Jager (1997) analyzed student grades and library circulation records (here, the measure of use) in hope of objectively establishing a statistically significant association between student academic performance and library use (unpaged). De Jager's study was preceded by several, similar projects by Mays (1986), Hisock (1986), Knapp (1968), and Barkley (1965). Self (1987) investigated possible connections between academic achievement and rates of reserve book circulation.

De Jager's study did not show a significant correlation between grades and rate of circulation. Regardless of the findings, however, the study suffered from two fundamental flaws of design: the assumption that checking library materials out is always followed by reading, absorbing, and applying the information contained therein, and that this process *leads* to improved class grades. One could just as easily posit that qualities that lead students to earn high grades—diligence, responsibility, information literacy—also lead students to check books out from the library. This confusion of correlation with causation is common in this type of study.

Koontz, et al. (2005) shared this mistake, making the statement that "the actual activities that are occurring within a library can depend not only on the racial, ethnic, or income characteristics of the population being served, but in combination with other characteristics, such as age" (p. 46). Similarly, Van House (1986) warned, "community characteristics may determine the propensity of the community as a whole to use the library" (p. 276), and library performance is determined jointly by libraries and their users, as evidenced by "the importance of community education level and age distribution

in determining several [library] output measures" (p. 279). Powell (1984) complained, "While such data have helped to produce a profile of the library user…they have not identified the basic causes of library use" and added "Kronus (1973) concluded ten years ago that the question of the causes of (public) library use is wide open. Apparently, such a conclusion could still be made today"
(p. 180). Unfortunately, the question seems to still be "wide open", thirty-five years after Kronus' statement.

Other studies purport to be concerned with measuring behaviors without providing a clear definition of the behaviors in question. Campbell and Shlechter (1979) called their study of the use behavior of undergraduates a "holistic approach to examining a campus library as a total system of interconnected sub settings in which a variety of user behaviors occur" (p. 26). The authors employed a complex research design that combined interviews, respondent diaries, and observation in order to provide "a more complete picture of library use" than the application of a single method would provide. Unfortunately, all three methods seemed to focus on the use *actions taken* rather than the *reasons* for use.

In order to study adult public library users' characteristics and reasons for visiting the public library, Marchant (1991) established two "general use measures": the ownership of a library card and the number of library visits during a three-month period (p. 201). In door-to-door interviews, conducted by master's students, respondents were asked, simply, if they used the library for enrichment of 1) home and family life, 2) vocational growth, 3) religion, and 4) politics. Marchant does not say if these categories were further broken down for the interviews, nor does he explain what he means by *use*

or if the respondents were told what was referred to by *use*, though it seems doubtful that this was done on a systematic basis. Regarding instructions for respondents, Marchant reported that "the specific use variables had only two values: do you use the library for this purpose or not?" (p. 205). Reviewing Marchant's book, from which this article was adapted, Robbins (1995) said "once again expectations are raised only to have hopes dashed by a title that implies that perhaps a contribution of some significance has been uncovered in the quest to better understand the use of the public library by adults" (p. 355).

Surveys, another common method of assessing use from the user's perspective, are problematic as well, as Savolainen (2006) pointed out:

> These surveys rarely address theoretically demanding questions such as what kind of processes take place when people make use of information received from different sources and channels. Usually…the processes of information use are left within a "black box"; major attention is paid to concrete issues such as the frequency of library use within a certain period of time (p. 1116).

Libraries are under increasingly more pressure to demonstrate their contributions to the well-being of their communities and constituents. In order to prove their importance to the community, it is more important than ever for library researchers to develop an understanding of the significance of all uses of the library, including those that are seemingly more banal, such as for study or meeting space. Unfortunately, locating information users for empirical research is even more difficult than locating users of the physical library. In Wilson's (2000) words, "paradoxically, user studies has been concerned with almost everything apart from the use to which information is put by the recipient or information seeker" (unpaged).

Use *in the Life of the Community*

Instead of taking the resource or the individual as the unit of analysis, some studies of library and/or information use focus on the community in aggregate. Japzon and Gong (2005) looked at neighborhood branch library use in New York City to find explanations for disparities in use levels not explained by traditional demographic and life style characteristics. While their results agreed with traditional assessments of frequent public library users being well-educated, white, and middle class, they suggested that New York City's significant Asian population revealed a second high-use group that might not be evident in national studies due to the lower percentage of Asian-Americans in the general U.S. population. The authors, noting that users of library branches in disadvantaged neighborhoods tend to make more in-house use of materials, called for the development of more extensive and standardized methods for measuring in-house use of materials,.

While Japzon and Gong's introduction promised to "take social and spatial interactions within neighborhoods into consideration" in the study, adding that "these interactions are the essence and spirit of urban neighborhoods of which libraries are a part and to which the libraries serve" (p. 448-9), the data utilized in the study seems limited to statistical measures of library use as correlated with various demographic and other characteristics of individual New York City neighborhoods. A multi-method study might have provided more insight into the reasons why two branch libraries located in demographically similar neighborhoods have different usage profiles, or why users of branches in disadvantaged neighborhoods use materials in-house. While one might speculate that this is due to restrictions on acquiring a library card based on proof of

residence or fear of checking materials out due to an inability to pay fines or replacement costs in the case of loss—if, in fact, what the authors refer to is use as measured by materials circulation—without an explanation from this type of user our guesses carry little weight.

St. Clair (2005) utilized personal communication with the staff of libraries that serve several Amish communities in Illinois, Pennsylvania, and Ohio to generate a picture of Amish library use. Though the data provided is primarily colloquial, it offers a fascinating look at what is generally a closed community. Contrary to common wisdom about library materials preferences, St. Clair discovered that many Amish prefer to read older materials, such as the *Hardy Boys* series. St. Clair learned that it would be difficult to rely on circulation data for information about true usage activity, as families in the communities studied tended to have one library card and regularly shared books with several members of a community before returning them, sometimes "at the other end of the county" (p. 46). Although video circulation in Amish communities is much lighter than in other public libraries, there is some activity, mostly among young teenagers. Librarians speculated that because Amish do not officially join the church until they are eighteen, younger teenagers are not bound by restrictions against electricity and "worldly" subject matter (p. 48).

Usage patterns in the communities St. Clair studied were highly dependent on the restrictiveness of their religious order affiliation. In some cases, usage was stopped completely after librarians made recommendations for or checked out "questionable" material to Amish patrons. In some cases, patrons will read materials that might be considered objectionable in the library rather than taking them home.

James (1985) investigated the verity of the axiom that reliance on the public library increases during periods of economic difficulty, and, in the converse, decreases when times are flush. This adage first appeared in the literature in W.F. Poole's 1880 Chicago *Public Library Annual Report* (p. 256) and again during the Depression, when the American Library Association reported a forty percent increase in national circulation. James also cites anecdotal evidence from library directors who, near the end of the Depression, predicted that they believed financial times were about to improve because they'd noticed a drop-off in circulation. In order to do empirically investigate what had long been anecdotal, James correlated economic measures such as the Consumer Price Index (CPI) and unemployment rate for twenty large cities in the United States with three variables meant to represent library use: book circulation, library cards, and annual library card registrations per capita. James collected data for the years between 1960-79, which, economically, represented both good and bad times in the United States (p. 258).

James found no relationship between the studied measures of library use and the nation's economic picture, a result that caused him to raise an interesting note of caution against "honest and urgent assessments of increased library use by experienced public librarians. Long after the results reported here have been made available for general professional approval, there will still be earnest accounts of increases in library use that coincide with increases in economic hard times" (p. 269). James also acknowledged that though the financial picture in the time period he studied was sufficiently dire, "library use in the 1930's and library use in the 1970's occurred in very different social environments" (p. 270). The fact that measures of library use increased during one time

period, but not the other, indicates the possibility of a confounding variable that James did not uncover.

Use in Discussions of Related Concepts

Several concepts with close relationships to the use concept provide us with further information about its various dimensions. In the parlance of concept analysis, many of the related concepts could be described as either antecedents or consequences of *use*.

Failure

"Failure of users…to locate the documents they were seeking" (Radford, 1983, p. 329) is an event that can be seen as preventing the use of materials or information. Radford describes different types of failure in the library context: user failure to properly locate bibliographic information about an item or locate a physical item that is owned by and available in the library, and library failure to acquire, properly process, or properly and expeditiously re-shelve an item. Several models of failure have been developed to help practitioners and researchers alike understand the problems with organization, access, and referral that create an instance of failure. It is interesting to note that this phenomenon is often described as user failure to locate needed materials, even if this was through no fault of their own.

Conservation and Preservation

There is an area of librarianship in which use of materials is not always a good thing: conservation and preservation of rare materials, defined as "prolonging the existence of library and archival materials by maintaining them in a condition suitable for use, either in their original format or in a form more durable, through retention under proper environmental conditions or actions taken after a book or collection has been damaged to prevent further deterioration" (Reitz, 2004-7, unpaged). Wilson (1982) provides a succinct description of the "use vs. conservation" issue: "librarians have given priority to the exploitation of library materials over their conservation in use to such an extent that accumulated neglect is almost irrecoverable in economic terms" (p. 163). It is undeniable that in the world of rare and antique materials, each instance of use moves the item of interest a step closer to its demise. Partly to blame, says Wilson, are the negative connotations associated with *preservation* of materials and those who practice it. "It implies librarians as 'squirrels' or 'misers'" (p. 164), Wilson himself does, however, equate the use of rare library materials with "exploitation" (p. 169), comparing the appearance of the British Library Reference Division's North Library with that of a field hospital "behind the front line, with so many volumes bandaged with white tape" (p. 166).

Access and Retrieval

Miller (1968) laments changes in his university library's organization and the effect such changes have had on his information behavior. Where libraries were organized "to make spatial aspects of the scholar-document interaction as favorable as

possible", Miller fears that access to much of the information contained in libraries has been curtailed by shifts in format and arrangement such as reliance on microforms (p. 288).

Wilson (1979) places use in the context of information retrieval: "description of the information content of a document is description of the primary uses of the document" (p. 21). While a document may have a use as a paperweight, he says, that use is trivial and not of interest to the study of information retrieval. The use of a document that is of interest to information retrieval is as a source of information, assuming that the document contains information and not misinformation. A document that contains incorrect information also has a primary use, but not one of interest to information retrieval either: "finding out what its author had to say about the topic" (p. 21). Informational documents may make contributions beyond their primary uses: facilitating decisions, supporting arguments, warranting predictions, are examples of these. In the information retrieval context, Wilson says, it may be helpful to group documents with similar *further* (as opposed to *primary*) uses.

The usefulness of information, says Meyer (2005) is not static, but dependent upon several variables: the context in which it is presented, the medium through which it is presented, and the relevance to the culture in which it is presented.

Buckland (1983) identifies utilization as the third phase of the use of a retrieval system following "formulation of an inquiry" and "retrieval". Utilization is the act of "becoming informed as a result of discovering the data yielded and, one hopes, [deriving] benefit from doing so" (p. 238). He considers the extent of utilization of the retrieved

information to be a better gauge of success for the retrieval process than the perceived relevance of the items received (p. 240).

Relevance

Underlying "much of the theory and research of information retrieval" both as "the connection between users and documents" and "the foundation for evaluation of information retrieval" (Janes & McKinney, 1992, p. 150), the concept of *relevance* has proven a thorny one to work out , though considerable progress has been made to illuminate the concept. A variety of methodological approaches has yielded "a rich literature" on the meaning of relevance, but as yet, it lacks a commonly accepted definition. As a result, there are several separate understandings of the relevance concept, each of which is connected to the concept of use. To use the dictionary definition, an entity's "relevance" is the closeness with which it relates to the matter at hand.

Some models of relevance in information science treat an item's relevance as a strictly objective quality, others consider an item to be relevant only if it addresses the issues of the user, regardless of how closely its subject matter matches the user's initial request. There are several theoretical models that outline multiple dimensions of relevance; many differentiate between *topicality*, or *topical relevance*, judged by the extent to which the information retrieved matches the topic of the request. *Pertinence*, or *utility*, however, differs: it is a measure of the extent to which the retrieved information is useful to the seeker. Cooper (1970) sought to replace relevance as a measure of retrieval success with *utility*, which refers not only to the topicality of an item but its "quality, novelty, importance, credibility, and many other things" (p. 92).

Janes (1994) says out that a document need not be highly topical to be pertinent, or have a high level of utility for the user; a document with “absolutely no relation to the topic” can prove itself helpful “in clarifying a user’s ideas, sending them off in a different direction, or confirming what they don’t want to see”, just as items of high topical relevance could be completely useless to the information seeker (p. 161).

Both utility and topical relevance can be seen as precursors to instances of use. Because topical relevance the basis upon which information retrieval (IR) systems are constructed and by judgments of which access is provided, it is a necessary pre-cursor of use. Utility, or pertinence, involving as it does users’ judgments of “authority, convenience/accessibility, interestingness, language, novelty, peer interest, quality, currency, topicality, and clarity/completeness” (Hirsh, 1999, p. 1273-5) must be in place in order for the user to declare an item worthy of use.

While there is a great deal of research regarding both the meaning of the relevance concept and the ways in which relevance judgments are made, both by individuals and by IR systems, there is little research regarding the relationship between estimations of relevance and subsequent use. An exception to this is Saracevic, et al.’s (1996, 1997, 2000) stratified model of relevance, which attempts to illustrate the interplay between different aspects of relevance, “starts with the assumptions that (i) users interact with IR systems in order to use information and (ii) that the use of information is connected with cognition and then situational application, that is, it is connected with relevance” (Saracevic, 2006, p. 27).

Obsolescence *and other Models for Measuring, Plotting, and Predicting* Use

One of the strongest strains of research productivity in Information Science is, it seems, the development of models, schemes, theories, and laws to predict, plot, and otherwise analyze the use of information resources. Bradford's *Law of Scattering* considers the extent to which citation is confined to a small percentage of individual scholars and works. Distribution of circulation and citation are plotted according to a Markov Model.

Trueswell (1969) imported the "80/20 Rule" from stock management in business, finding that 80% of a library's circulation is accounted for by 20% of its stock (p. 458). In the thirty years since, this rule has been applied to electronic journals, archives, and other library resources.

"One may say that obsolescence studies focus on the relations between document usage and the passage of time" (Oberhofer, 1993, p. 587). Like relevance, *obsolescence* has received extensive treatment in the LIS literature. Once an item's use, as measured by citation and circulation, has peaked and undergone a precipitous decline, it is considered to have become *obsolete* and having entered its period of *decay* (Line, 1993). If we lack an understanding of the meaning of "use", however, how can we evaluate obsolescence? In the context of the *Object-Content-Use* syndrome, in which the "object" refers to the physical embodiment of research or ideas, e.g., a journal article, while the "content" is the research or ideas contained therein and the "use" "its real or potential usage" Oberhofer (1993) asks, "what is being analyzed? What is being considered the unit of analysis: the Object, the Content, or both?" (p. 587).

Hodowanec (1983) suggested that in academic libraries, an item that circulates widely among individuals with no apparent regard for discipline may fall into obsolescence later than an item that circulates immediately among a small group of patrons. He calls the period of time during which an item circulates frequently its period of *peak use* (p. 427). While some information scientists warned against overestimating "the tenuous relation" of the study of obsolescence for the purposes of determining which materials might be discarded to the "scientific study of obsolescence" (Brookes, 1975, p. 16), others touted this type of formula as offering insight into use patterns that can be applied to materials, facilities, staffing, and other management decisions. Line (1993) revisited an earlier treatise on the identification of obsolete materials for the purpose of weeding. He acknowledged several key points: changes in use patterns will vary dramatically, depending on the subject matter, type of material, and type of library in question; the access policies of the library will impact the amount of use seen by the collection, and the collection's patrons will have a tremendous effect, making not only "the application to one library of data obtained in another library dangerous, it also makes the use of data collected a few years ago in the same library highly dubious" (unpaged). In other words, "obsolescence' is not an objective thing independent of circumstances; it is, almost by definition, in the mind, or rather the uses, of the user" (Ibid). Indeed, in response to Line's initial proscription for measuring obsolescence of the collection, Brookes (1975) cautioned "library usage is very difficult to define and to quantify with the scientific precision demanded" for making decisions about discarding based on *obsolescence* (p. 16).

Information Needs and Information Seeking Behavior

Krieklas (1983) defined *information seeking behavior* as "any activity of an individual that is undertaken to identify a message that satisfies a perceived need" (p. 6). Studies of information needs and information seeking behavior can be library-focused, but the unit of analysis is information, not circulation or door counts. Krikelas cautions against equating *information* with something that can only be attained through use of literature or other tangible resources, saying "such approaches do not account for the various alternative sources of information (e.g., memory, observation, and informal conversations)" (p. 7)

Wilson (1981, reprint, 2006) discusses *information use* as it relates to the concept of information needs and their satisfaction. Although (as discussed) *need* is another term for which there is no agreed-upon definition in the LIS contexts, it can be understood as "a psychological state associated with uncertainty, and with the desire to know an unknown" (Saracevic, 1975, p. 331). Once an information source has been identified by the information seeker, Wilson says, "it will at some point be 'used', if only in the sense of being evaluated to discover its relationship to the user's need. That 'use' may satisfy or fail to satisfy the need" (p. 660). Additionally, that information may be transferred to another seeker, if the initial information seeker recognizes that it may be relevant to him.

These attendant concepts represent merely a selection of the LIS-related concepts with some connection to *use*. As the literature reviewed in this chapter demonstrates, the centrality of the use concept to such diverse concerns in LIS research, theory, and practice as evaluation of materials, services, resources, and collections; planning and assessment; user behavior, information seeking behavior and practices; the activities of library

patrons; surveying of library patrons, and concepts related in information organization, access, and retrieval demonstrate the importance of clarifying what is meant in discussions of *use*. To assist with that endeavor, the subsequent chapter presents a *Typology of Use* as presented in the literature of LIS.

CHAPTER 5

THE USE CONCEPT IN LIS: DIMENSIONS AND TYPOLOGY

Review of sampled Library and Information Science (LIS) journal literature reveals that understanding and application of the use concept is inconsistent and contradictory. This confusion has created disorder in the body of work reflecting the empirical measurement of library and information resource use. Unfortunately, the data generated in such studies is frequently referenced for decisions about resource acquisition, service and resource prioritization, evaluation of services, individuals, and facilities, and in making comparisons between resources, services, facilities and individuals' ability to perform functions of employment (Osburn, 1982).

The concept of use as represented in the literature of LIS can be seen as having several separate and appreciably different dimensions, each of which is measured differently, if it is measurable; has different metaphors and discursive themes associated with its discussion in the literature; and is understood differently by library and information stakeholders. Yet, it is possible to find multiple examples in the LIS literature of instances of each being referred to simply as "use" with no further qualification. Clearly, this confusion creates a problematic situation for discussions related to *use* in the LIS discipline along the continuum of disciplinary discourse, from casual conversations between colleagues to peer-reviewed, empirical research.

Rodgers' Evolutionary Concept Analysis (ECA) calls for the following questions to be answered:

1. What is this 'thing' the writer is discussing?
2. What is happening when an instance of this concept occurs?
3. What happens before and after/as a result of an instance of this concept?
4. Is this concept used differently in different situations or by different types of people?
5. What terms substitute for the concept being investigated?
6. What concepts or terms frequently appear in close literal or figurative proximity to the concept in question? (p. 91-2)

Interrogating the sampled texts in this manner allows the following aspects of the use concept to be uncovered:

- *Referents:* events or activities to which the concept refers. For example, "skiing" is a referent of the concept "winter sports".
- *Attributes:* the defining qualities of the concept. The attributes "performed outdoors", "performed in cold temperatures", "performed wearing footgear" could all be attributes that describe "Winter sports." It is important to note that attributes of a concept are not required to be mutually exclusive or definitive. For example, both "performed individually" and "performed with a team" could be attributes of "winter sports" in spite of the fact that they are contradictory.
- *Antecedents:* events that take place before the instance of a concept. An antecedent for "winter sports" might be "outdoor weather turns cold" or "substantial snowfall".
- *Consequences:* outcomes of the instance of the concept or phenomenon. Consequences of "winter sports" might be "improved physical and mental health" or "hypothermia".
- *Closely Related Concepts:* because concepts are constructed within a discourse, they are frequently attended by other concepts that help to form the frame of reference for that concept. A concept that is closely related to "winter sports" might be "outdoor activities" or "popular pastimes in the northern United States".

This analysis demonstrates that *use* as presented in the LIS literature is not a monolithic concept, but is constituted of several interconnected but distinct dimensions:

I. Use as an Abstraction: The discussion of use as a generality, made with no explanation of the operational definition in question.

   Ia. Use as a Facilitator: a sub-category of the *Abstraction* dimension of use. Library-specific; use of the library as a physical space to meet non-library specific needs.

II. Use as an Implement: use of the library as an entity, establishment, or symbol; use of information and/or library resources as a tool

III. Use as a Process: *use* as situated with the user; what Dervin and Zweizig refer to as "the library in the life of the user." How an individual uses a library or information to achieve an end.

IV. Use as an Instance: the transactional definition of use-action as measured quantitatively.

   IVa. Use as a Connector: a sub-set of use as instance, referring to transactions that lead to other use-actions such as checking out a book, or retrieving a journal article.

Although there is some overlap of conceptual aspects in each of the dimensions of use—as the dimensions themselves overlap—each dimension has referents, attributes, antecedents, consequences, and related concepts that are in some cases, unique to it.

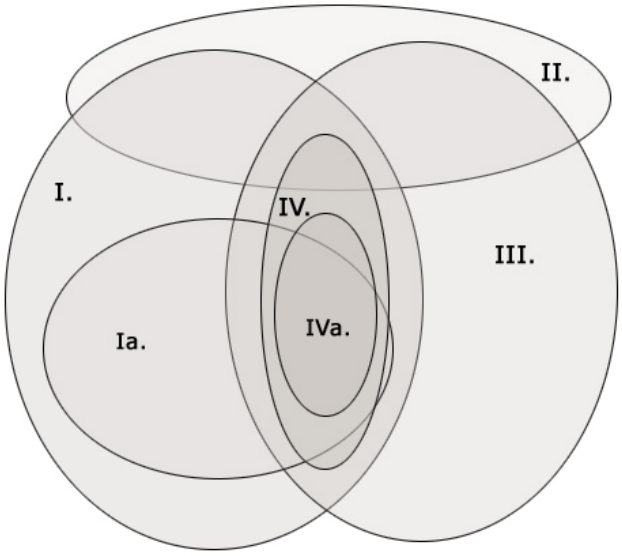

Figure 1. The *Use Typology*: Dimensions

Dimension I: Abstraction

Books are For Use. (Ranganathan, 1931)

Table 3.

Use *as Abstraction: Characteristics*

Attributes	Province of “middle class”, access to books/knowledge, community center, important skill, effective/ineffective use of materials, book supplier, information provider
Referents	Book supplier, study place, circulation of books, book reading/guest speaker attendance, finding materials in catalog, finding research materials through indexes, databases,
Antecedents	Instruction in resources (leading to “improved perception” of patrons), accessibility, community need, adequate seating, proximity, visibility, atmosphere/amenities
Consequences	Improved performance in school, completion of projects, accomplishment

Discursive Context(s)	Use in the life of the user, Evaluation of Use/non-use
Related Concepts	Accessibility, class influence on education, library as community resource

The *abstraction* dimension of the use concept can be understood as general or colloquial discussion of *use* which may or may not be supplemented by specific examples of the use or usage being discussed. Discussions of use as an abstraction are among the most frequent in the literature of LIS. In abstract discussions of use, methods of empirical measurement, specific connections between use and the user, and/or the user and the original motivator for the use are often unclear. Use as an abstraction is use in its most non-specific form.

In the statement "undergraduate students don't use the library as frequently as they did when I was a student," *use* is an abstract concept. The type of use being discussed is not further explained—does the speaker refer to physically visiting the library or checking out books? She may be talking about either, neither, or both of these types of use. The vagueness of type of use being referred to, however, may not matter to the person to whom the speaker makes this statement. He may agree or disagree with the speaker without any further information than that provided in the statement, or he may ask the speaker for clarification. Upon clarification, the person to whom the speaker made the statement may find that he assumed the speaker was referring to a completely different type of library use.

One of the most enduring landmarks of librarianship, Ranganathan's Five Laws of Library Science, begins with an example of use as an abstraction, his First Law: "Books

are for Use". In spite of the explicit reference to "books", Ranganathan's explanation of the first law makes it clear that in this case, "books" are meant to be a metaphor for library resources and services, generally. In part, the abstract nature of the terms of the first law allows it to be applied to myriad library resources and services, including some that Ranganathan likely would not have imagined seventy years ago when the Five Laws were written. "Even in Ranganathan's day, books were not the only documents collected by libraries, and it is wrong to conclude from his words that books were the only library materials that mattered to Ranganathan. His essential point is that libraries acquire materials and make them accessible so they can be used" (Gorman, 1998, p. 20).

Leiter (2003) interprets the first law in this manner:

> This law dictates the development of systems that accommodate the use of library materials. For instance, proper and regular shelving of library materials facilitates the use of books. Logical, topical arrangement of materials also facilitates their use. To sum up what we should take from this first law, care must be taken to provide a facility and an organized collection that invite and promote the *use* of its resources. Simple? Yes. Important? Critical! (p. 414).

Black's (2006) report on British public library-related opinion and activity presents several examples of use as abstraction. Data for the piece was gleaned from essays submitted to the extensive *Mass Observation Archive* in which respondents referred to book circulation, access to knowledge, and other activities as "library use." In response to the 1988 directive, use of the public library was also frequently discussed in a class or political context. Several respondents seemed to feel that middle-class Britons were more likely to use the library than their working class or "nouveau riche" counterparts (p. 440, 443). Others railed against this notion: "every working class person I know has made use of the library without qualm. It amazes me when people talk of it as a middle class service!" (p. 443). Another respondent characterized checking out books

from his library as “merely political acts. I use my library to defend the principle against those philistines in the government who would say that a public library system is not being used by sufficient numbers to warrant public subsidy” (p. 443).

Problems with Use *as an Abstraction*

The 1999 *Mass Observation Archive* directive, which specifically addressed public libraries, asked “has anything in your life…increased or decreased your use of the library or changed the way you use it?” “Has anything about changes in the library changed your use of it?” (Black, 2006, p. 400). A series of studies illuminates the dangers of failing to explain what is meant by “use” when surveying the public about their library and information-seeking-related activities. Bookstein (1982) first observed that a group of Graduate Library School students had widely varying interpretations of the actions that constituted examples of library and book use. Kidston (1985) had similar findings from graduate business school students, although they appeared even less liberal in what they considered *uses* of the library than the library school students had.

Ercegovac (1997) predicted that the electronic environment for information seeking was likely to further complicate and augment the number of library and information uses, creating something of a crisis for users, who do not understand these new conceptions of *library use*. The first section of Ercegovac’s paper makes a number of interesting observations. She states that the shift of many library resources to the electronic environment has “modified many traditional library services, introduced new jargon, and created new library uses” (p. 36). She goes on to state that if students are to

"become self-sustaining and effective users of information sources and services, they need to understand various library uses" (p. 36).

The study updates Bookstein's (1982) study that identified a lack of understanding of library use-related terminology in user studies, but with one notable difference. Ercegovac did not ask her respondents, as Bookstein (1982) and Kidston (1985) did, whether or not various actions would constitute a library use, but whether or not *they* used the library in specific ways. The survey did uncover several interesting outcomes: specifically, only 27% of respondents reported using the library as a space to meet a friend, and only 30% used the library restrooms. Negative responses, Ercegovac (1997) suggests, could reflect "students' perception of the appropriate ways to use the library rather than their actual uses of the library" (p. 47). Ercegovac did not explore the possibility that the respondents truly did not use the library in the ways they said they did not. Instead, she speculated that "people tend to have less problems with more traditional 'library uses' such as using the library as a space to study, to read reserve material…more serious problems are related to less traditional library uses and activities, most of which have been affected by various information technologies" (p. 49).

Dimension Ia: Facilitator

> The library is a place for quiet study and research. Any person who, in the opinion of the library staff is habitually not using the library for its intended purpose will be limited to two hours per day. (Myers, 2007, unpaged)

Table 4.

Use *as Facilitator: Characteristics*

Attributes	Assertion of independence for children/first safe place; romantic place, place to catch an illness (perception of books being germ-ridden), use of library for non-information seeking activities…inappropriate, expensive, wasteful, inefficient. Inappropriate use by homeless for "non-informational needs." Appropriate/inappropriate, legal/illegal, responsible/irresponsible, "frivolous", congestion-causing, supporting mission, age-appropriate; Essential, performing needed service
Referents	Place for homeless to spend the day (day center), sleep, bathe, "get out of control", Internet or other computer station use, attendance of non-library related programs, Stopping at the library between school and home, Library as meeting place for boys/girls, Germs on books or other surfaces, Place to go, get out of the house, socialize, Computer lab in academic library, Study space for commuter students (academic library)
Antecedents	Students needing convenient study location between classes, Comfortable functionality, texture, Sitting all day with nowhere else to go, Homelessness, availability of library, access
Consequences	Space that was "built to hold books…holds students studying" (Lincoln, p. 9), No space for legitimate users, Homeless "devalued and discounted", Frustration of staff, other patrons
Discursive Context(s)	Use in the life of the user, Evaluation of Use/non-use
Related Concepts	Library as place, Traditional library services vs. computers, *Habitus*: the place, the people who inhabit it, and the actions within, Access, social justice, public nature of public spaces; library in the life of the community, access; public vs. private behavior

Use *as a Facilitator* is a sub-dimension of the *abstraction* dimension and refers to the use of the library to satisfy needs that are not traditionally connected to the library's core purposes of collection, organization, preservation, and dissemination; or for

activities that could be conducted in another facility, such as for meeting space, study space, or a climate controlled environment during extreme weather. This type of use focuses on the library's facilities and is closely tied to the idea of the library as place. Sommer (1966) in reporting on a study of user behavior in the library at Amherst College, provides an excellent illustration of the facilitator dimension of library use:

> [the study] showed a high percentage of readers in a college library who made no use whatever of the collection but rather confined their studies to books they had brought with them. It was apparent that the library was serving as a study hall, a function that could have been filled by study facilities in other buildings, perhaps dormitories or convertible classroom space (p. 235).

Of course, presenting a clear understanding of the intended meaning of the abstraction and facilitator dimensions of the use concept is less important in casual conversation ("undergraduates don't use the library the way they once did") than in empirical research. Lack of clarity becomes problematic when *use* is presented as an abstraction in empirical research ("undergraduates use the library 37% less than they did a generation ago") or as a factor in policy development.

Facilitator as a Locus for "Inappropriate Use*" and "Problem Patrons"*

Much discussion of the *facilitator* dimension of the use concept deals with judgments of the *appropriateness* or *validity* of certain types of use, such as the use of the library for a study space, a site from which to access the Internet, or as a daytime refuge for the homeless. As public libraries continue to expand offerings beyond the "traditional" library services noted by Ercegovac (1997) in the previous section, understanding of what constitutes *legitimate* use becomes more diverse. An appraisal of legitimate use of the library as a facilitator is evident in this letter to the editors of *Library*

Journal, written in response to the regular "How do you manage?" feature, in which two library managers presented responses to a hypothetical patron's—the mother referred to by the letter writer—complaint about the disruptive behavior of some teenagers in a public library:

> [the authors] should be ashamed of themselves for not even considering the mother's right to have a safe, pleasant experience with her child at the library as they make legitimate use of its resources. That's right, the mothers use of the library is legitimate and the disruptive teenagers isn't (Merry, 2006, p. 12).

Computer and Internet access represent a flashpoint for discussion and policies regarding what constitutes *appropriate* and *inappropriate* use of resources and facilities. As libraries have become known for providing Internet access, policies have been created to control the types and duration of computer use allowed, as well as the types of people allowed to use the computers and software libraries provide. Questions about the appropriateness of viewing certain types web sites in the library are persistent. Some types of computer use are annoying to some; "frivolous" use of computers in academic libraries causes workstations to become congested, keeping patrons from accessing the computer for uses that support the mission of the institution (Tenopir, 1997, p. 34). In many cases, patrons are subject to computer use policies that require them to agree to only engage in appropriate uses of the hardware and software; sometimes they are required to complete instruction as a condition of use.

As the number of homeless Americans has grown since the 1980's, so has the number of homeless library patrons (Ayers, 2006). Homeless patrons are often perceived as using the library to sleep, clean themselves and their property in the bathroom sinks, and take advantage of the climate controlled atmosphere. They are, in other words, "individuals turning to libraries to meet needs that are other than informational"

(Simmons, 1985, p. 114). Homeless patrons may also perceived as discouraging legitimate library use with body odor, erratic behavior, and by crowding the physical space of the library. Some libraries have instituted policies to limit the amount of time that a patron may spend in the library if he or she is perceived not to be "using the library for its intended purpose" (Myers, 2007, unpaged).

Such statements are at the crux of the facilitator dimension: "what constitutes legitimate use of a public library" (Simmons, 1985, p. 114)? "Are librarians prepared to place value judgments on an individual's use of the public library" (p. 115)? In a letter of response to Simmons, Dahling (1985) asserts that "the homeless are not the problem. We are. Until we put into clear perspective what [libraries] are doing and why, we are going to have difficulty discussing how much or what sort of service and access to give the homeless or anyone else" (p. 415).

Discussion of the appropriate uses of libraries and their resources is by no means new: it is interesting, however, to be reminded of the uses of the library that were considered questionable in the past. "I am convinced that [Europeans] have a much sounder idea of what a library is for, and how it should be used, than we have" opined Albert Jay Nock (1924): "they do not think it is any part of a library's function to provide entertainment, and if free entertainment is what you are looking for they don't want you around" (p. 480-1). In this case, Nock was not referring to Internet access or the availability of DVDs, but the provision of "the current best-sellers or any of the ephemeral stuff…which is of no conceivable value to anybody, except as a pastime" (p. 480). According to Nock, the appropriate use of a library was as "a place where a serious

reader may get the use of serious books which he cannot be expected to have the use of otherwise," not "cheap and common" fiction materials (p. 480-1).

Shorey (1941) provided a look at the appropriate/inappropriate use concern as it looked nearly seventy years ago. The questionable activity at that time was patrons' seeking assistance from reference librarians for answers to puzzles. Shorey cautioned colleagues not to dismiss "puzzle work" by asking "each patron what use he is going to make of the answer before we hunt it for him" (p. 866). Shorey objected to the idea of librarians spending "hours planning to get people to use our library, and then [pulling] down the shades and [barring] the door against the puzzle fans" (p. 866).

Discussion of *use as facilitator* occasionally centers around patrons' positive memories of use of the library facility. Respondents from Black's (2006) report on public library use in Britain recalled stopping off at the library on their way home from school as a way to express "independence from parental control" (p. 450). Respondents' statements indicated that the public library was an acceptable *third place*[12] for children at that time and provided a "legitimate excuse go out and take our time, after school" (p. 450). McNicol also noted that MAO respondents identified non-library specific roles for the library—as a place for people to go to get out of the house and socialize with others.

Studies of the facilitator dimension of use can make a major contribution to the practical knowledge of library planners and administrators. Studies like Sommer's (1966) study of the ways in which library patrons endeavor to protect their privacy and quiet space while studying, and Campbell and Schlechter's (1979) multi-phase study of

[12] The "Third Place", as described by Oldenburg (1989), is the location that supplements one's life at home (first place) and work or school (second place). Third places are free or inexpensive, may offer food or drink, are welcoming and comfortable, are frequented by a core group of regular patrons, and are highly accessible to a large number of individuals.

undergraduates' use of an academic library's physical space facilitate understanding of how people are most likely to utilize the physical space of a library. The type of information provided by these studies—down to where a patron is most likely to sit in a reading room, depending on the layout of furniture and where other patrons are already seated—can provide valuable blueprints for planning new facilities or rearranging a library's existing services and layout. Lincoln (2002) introduced Bourdieu's idea of *habitus* as an umbrella concept that incorporates some of the facilitator-related uses of the library. The Habitus concept is comprised not only of "where one lives, but where one dwells; the complex individuals who dwell and inhabit those places; and all the processes of habitation—the dwelling in" (p. 8). In the academic setting, the processes of habitation include studying in the library, which one respondent described as creating "high priced study space" (p. 9).

Antell and Engel (2006) investigated the ways in which faculty and doctoral students' perception of the academic library as a place conducive to scholarship had changed in the digital era. Although three of the four dimensions surveyed directly addressed use of the academic library's information resources, the fourth, which assessed the contributions of the physical space of the library to research, was rated more highly by younger scholars than by their older counterparts, a result contrary to the authors' hypothesis. Younger respondents described the physical space of the library as "very conducive to intellectual idea development…the perfect place to concentrate" (p. 552). The authors wonder if the library holds the same appeal for young faculty that the dorm does for some students as a "place to 'escape,' the only place where they can do sustained, focused intellectual work" (p. 553). Shill and Tonner (2004) studied the impact

of renovation and the addition of “non-library” services and facilities on academic library visits. Surprisingly, they found little correlation between the addition of cafés, snack bars, computer labs, or classrooms, and increased door counts. Improved work stations, natural lighting, layout, climate control, and “ambience”, on the other hand, did appear to precipitate increased building attendance, leading the authors to conclude that “a high-quality building does make a difference” (p. 149).

Limited anecdotal evidence might indicate that library patrons frequently seem to have a more proscriptive view of the suitability of the library’s use as a facilitator. Bookstein’s (1982) study of University of Chicago graduate students’ understanding of library and book use revealed that only 18% considered “using the library restroom” to be a reportable library use. A slightly higher 21% considered “meeting a friend” to be legitimate (p. 89). This is a question that bears empirical investigation.

Dimension II: Implement

> Information should be conceived of as something malleable, designable, and flexible, like clay to be molded according to situational needs. (Savolainen, 2006, p. 1118)

Table 5.

Use *as Implement: Characteristics*

Attributes	Tool, effective use requires instruction, plays role in elevating downtrodden, should be valued and appreciated, cost per use, reward; symbolic, currency, rhetorical, strategic, practical, not academic; affected by context, public utility, supportive of informal education, supportive of technical education, provides orientation, reduces uncertainty, enriching, provides context, provides practical information, informs citizenry,

Referents	Catalog, indexes, vocational collection, telephone for reference requests, newspapers, microfilm, library, books, library services, information vessels, not information; citation, "handling" information; "consuming" information, information use by rural community residents, use of archives finding aids, use of Internet for medical information,
Antecedents	Lack of school library, lack of needed materials in school library, limited school library hours, need for progress, need for an item or to located information, need for information contained in a vessel available at the library, accessibility, ease of use, technical quality, previous use, membership/relationship to group, argument to be made, strategy to be assessed, need to learn about "arranging flowers, decorating the house, keep tropical fish", context, usefulness of information, presentation of information, unfamiliarity; need for recipes, sewing patterns, hunting instruction,
Consequences	Community progress, creation of informed citizenry; confusion or success, depending on quality; cost to individual and/or library, reaffirmation of allegiance to group, accumulation of evidence, consumption of most cost-effective of resources, improved orientation,
Context	Use in the life of the user, evaluation, theoretical models of *use*, use in the life of the scholar, use in the life of the community,
Related Concepts	Value of library, consumer models of use, citation, evolutionary behavior/foraging, access

The dimension of *use as implement* refers to speaking about the use of libraries or information to solve "concrete, specific tasks" as if speaking about making use of tools (Jelin, 1970, p. 15). Implemental uses of information are characterized by an emphasis on educational, self-improvement, or practical matters; the implemental dimensions of library use refer frequently to the symbolic status of the library as "the people's university". Jelin distinguishes implemental use from *humanistic* use of the library; though *use* of the humanistic variety may be associated with education, it is as a support for formal education.

Tobin (1974) attributes early interest in this type of use to the focus on administrative techniques and Operations Research that came into vogue after World War II. O-R, as it was called, approached the study of *use* from a business perspective which was, in part, interested in evaluating the nature and *efficiency* of use of libraries and their resources (p. 109). The implemental dimension of use can be seen in statements like "it is of paramount importance that the Negro make use of libraries, for his use of libraries and books is the key to Negro progress" (Josey, 1962, p. 161).

Discussions of use as implement may center on the adequacy of a patron or user's leveraging of information or library services, or of literal tools, such as photocopiers, microfiche readers, and computers. Smith (1999) makes reference to the nature of public library non-fiction book circulation as "books as tools", referring to the heavy proportion of instructional and practical texts to "academic" works (p. 310).

Interestingly, the exact meaning of implemental uses is rarely explained. For example, Josey (1962) never articulates exactly *how* the use of libraries and books will facilitate progress for African-Americans. In this way, the *implement* dimension of the use concept is similar to discussions of use as an *abstraction*.

Dimension III: Process

> This picture of reference use is a snapshot of a fluid process—a search that often moves through several stages, reforms itself at each stage, and uses library services in both mediated and unmediated modes. (Childers, 1997, p. 169)

Table 6.

Use *as Process: Characteristics*

Attributes	Dynamic, iterative, interactive, user-centered, practical, varied, process-oriented, stage-dependent, contextual, interactive with collection
Referents	Collection, information acquired through reading, information, library (for any reason), reference services/resources
Antecedents	Ambiguity, disorder, problem, information need, motivation, assignment,
Consequences	Needs met, confusion improved, "gap" bridged
Context	Use in the life of the user
Related Concepts	Realistic value, marketing to attract non-users, outreach

The statement "I have used the University of Alabama's library extensively in the completion of my dissertation" might seem to represent an example of *use as an abstraction* unclear on its face, but if prompted the explanation that the *use* in question has included checking out books, asking reference questions, studying in the physical space of the library, logging on to library-subscribed databases from home, and so on illustrates a *process* of use. In other words, the library was used in many different ways over the course of the project in question, some of which are measurable, as in the case of the number of books checked out. Others are less easily subjected to scrutiny, such as the *actual use*—in such tangible forms as verification of a fact, or intangibles such as inspiration—of ideas and theories in those books.

Because the *process* in this dimension of use belongs to the user rather than to the resource, by necessity discussion and evaluation of *use as process* is centered with the user. It is possible to discuss the process of use of the library and information resources

not only during a discrete project, such as a dissertation, but also throughout the life, or any period of the life, of an individual user. Naturally, a study of use from this perspective would differ dramatically from those of more commonly studied resource-oriented use such as the circulation of individual materials or parts of a collection or the number of log-ons to a website or database.

Zweizig (1976) and Dervin (1976, 1977) were among the first researchers to emphasize the importance of focusing on the user as the unit of analysis in studies of library and information use. To that end, Zweizig (1977) developed a library user index score, based on the number of an individual's instances of (1) visiting the library (referred to, incidentally, by Zweizig, as *library use*) (2) telephoning the library for information within a year's time, and 3) *intensity* of use, measured by whether the individual used the public library as a) a place to study or work, b) get fiction or recreational books, c) get non-fiction or information books, d) get books for family or friends to read, d) get answers to particular questions, and d) any other ways in which the respondent used the library. According to Zweizig, the scale approach allowed several benefits, not the least of which was the reliability of a multiple-measure model actually measuring use.

Though limited to the activities performed by undergraduates within the physical space of the library, Campbell and Schlechter's (1979) study did a good job of illustrating the *process* dimension of use. In one segment of the multi-phase study, respondents were asked to keep a "behavioral diary" about their visits to the library. The authors instructed their diarists to be wary of collapsing too many individual use actions into one. "They were given the example that 'searching for a book' may include several separate

activities, such as ‘talking to staff,’ ‘looking through card catalog,’ and ‘browsing in stacks’” (p. 31-2).

Pomerantz and Luo (2006) discuss the difficulty of developing an understanding of the outcome of use as a process. In their study of motivations for using chat reference service, the authors identify the main evaluation metrics for traditional reference service: correctly answering a question while providing service that is satisfactory to the patron. According to the authors, the problem with these measures is that they “assess the outcome of the reference interaction immediately following its conclusion” and generally do not follow up with the patron to determine the ultimate utility of the information received (p. 351).

Allen (1972) discusses a study by Baker, et al. (1968) that established the differences between information sources used in different phases of a project, labeled *need events* (defining the problem) and *means events* (generating ideas). While the study participants relied heavily on interaction with others during need events, they only sought information in the library during means events.

Because the focus of this type of study is the user rather than the resource, a clear understanding of the nature of the use under scrutiny becomes even more essential. As Bookstein (1982), Kidston (1985) and Ercegovac (1997) have shown, library users’ conception of library use can differ dramatically from both library professionals’ and other patrons’. Kidston (1985) speculates that this may be because users “define use with an eye on their reason for going to the library” (p. 149). For example, he suggests that the reason only 42% of his respondents considered searching unsuccessfully for a book to be a use of the library was “because the search was unsuccessful, nothing had changed” (p.

149). In other words, because the respondent was no closer to achieving his goal after searching for a book and not finding it, less than half considered this an example of library use. In this case, the user's rejection of the idea of having used the library could be in direct opposition to a gauge of library use based on door count, number of items removed from the shelves, catalog searches, or reference transactions.

Childers' (1997) description of patron behavior in the reference department of a public library illustrated the *process* dimension of a specific type of library use. He interviewed patrons regarding their experience in seeking reference information: whether they asked for help, if they knew the resource they were seeking before coming to the library, which resources they'd used, if they'd had success, and if not, their believed reasons why. This type of study provides an illustration of several facets of library and information use: the fluidity of the process, patrons' interaction with the collection (including possible sticking points, such as confusion caused by signage or arrangement of the collection), and patrons' feelings about the library and librarians. Childers' study led him to the conclusion that "users often do not approach a reference desk, and many users who could benefit from professional contact feel they know the best resource and sense no lack of information or lack of search success" (p. 172). Some examinations of use as a process are concerned not with the user's process, but the voyage taken by the information itself. Martyn (1977) said, "the distinction between information flow and information use is narrow, if it exists at all" (p. 17).

Dimension IV: Instance

The use measured in this study does not claim to be total use. It is a sample of those uses in which a patron removes a bound volume from a shelf and subsequently returns it to a collection bin, rather than to the shelf. (Rice, 1979, p. 36)

Table 7.

Use *as Instance: Characteristics*

Attributes	Unidirectional, static, librarian/management-centered, objective, political—checking out books to prove libraries should receive funding; disproportionate, dependent on past use, dependent on physical location, dependent on printing, dependent on clicking, connection to object
Referents	Collection, circulation, clicking on a title, accessing a file, downloading all or part of an e-book, viewing e-journals, printing or photocopying an article, borrowing, handling items, withdrawing, consulting item in-building, leaving items on tables, citation, in-house, accessing print journal, traceable access of electronic resources through gateway, usage data from aggregator
Antecedents	Accessibility, demographic factors, free photocopies, existence of "super-patrons", predicting user wants/needs,
Consequences	Proven popularity of e-journals, possibly skewed statistics, strategies for approaching different types of users, strategic statistics gathering, user satisfaction, lack leads to obsolescence,
Context	Use in the life of the library Evaluation of Use/non-use, evaluation of user behavior, comparison of citation to "use",
Related Concepts	Value of library, objective measures of quality, ease-of-use, convenience, usability, stability, Matthew Principle, citation

Use *as an Instance* includes transactional instances of use of the library or information that can be recorded and quantified, such as "books circulated, interlibrary loan requests filled, and reference questions answered" (Zweizig, 1977, p. 4) as well as door counts, the removal of individual items from the library shelf, and counts of

document downloads from databases. Although instances of use certainly occur as part of the process dimension of use, measuring individual instances of use removes them from the user, making the task of discovering a broader picture of an individual's use of the library or its resources or information in general difficult or impossible. Although "the user provides an occasion for the transaction…what is counted is the transaction itself" (p.4).

What does it mean that a book was checked out from the library? Was it read? If it was read, did it provide the reader with some type of information that was then applied to a problem, or was it read strictly for entertainment? Why did 376 individuals walk through the doors of the library last Tuesday? Did they find the information they were seeking, or were they simply looking for the water fountain? Measurements of *use as instance* describe activity rather than outcomes or contributions. The difference between the *process* and *instance* dimensions of use is the difference, in Martyn's (1977) words, between "studying how [users] use materials or services that contain ideas, and not how they use the ideas themselves" (p. 21). White (1985) ties the promotion of use as instance as a measure of library quality to library users' discounting of librarians, and blames librarians' publication of measures of instance such as circulation for leading library constituents "to believe the quality of a library is measured in the number of items it circulates" (p. 70). White believes that emphasizing this type of library activity confuses patrons. After all, professional librarians are not needed to check out books, only "clerks to charge out", leading to "the common perception of the librarian as someone who stamps dates into the back of books" (p. 70).

While measurement of the statistical model of use is seemingly straightforward to conduct and analyze, it actually suffers from a number of operational flaws as demonstrated by the widespread criticism of the Pitt Study. One of the major questions raised about the Pitt Study was the accuracy of the statistics recorded to measure use. Indeed, while summaries of circulation statistics may seem straightforward, some studies have shown that this type of statistic frequently reports fewer incidents of circulation than actually occur. Meier (1963) found that reserve materials were read on average almost three times for each time they were checked out. Meier found the "table study", in which use is measured by the number of times an item is removed from the shelf, to be similarly problematic, as books removed from the shelf were picked up on average by two people before being reshelved. Interestingly, Meier also found that the frequency of sharing of materials between patrons was highly dependent upon the library's policy regarding socializing. If patrons were allowed to have conversations in the reading room, the number of times an item was read between circulations was much higher than if patrons were expected to be silent.

Identifying and collecting statistics related to circulation and other materials use is not always as straightforward as it seems, and migration to the electronic environment has not made this situation any better. For example, while it is possible to generate access reports from many or most electronic library products that provide information such as time spent logged on to a particular product or number of individual log-ons, the lack of standardization between products complicates the understanding of this type of information. Some electronic catalogs and databases automatically log their users off after a period of inactivity, while others do not. The remote access capabilities of these

products could make it more likely that users will multitask while conducting electronic database research, possibly using other research products simultaneously, taking telephone calls, cooking dinner, even stepping out to run an errand while remaining logged on to the database. If the patron is timed out of Database A after a period of inactivity and must log back on to continue using Database A, but can stay logged on to Database B indefinitely, the number of access statistics for the Database A will be higher than Database B's, regardless of actual benefit derived from either database. On the other hand, an hours-long session logged on to Database B could be mistaken as a particularly fruitful research session when the time spent searching for and processing information was actually a small fraction of time spent logged on to the database. The remote nature of the use of such resources further complicates stakeholders' ability to understand how databases are actually being used. Levine-Clark's (2006) study of the nature of e-book usage at the University of Denver demonstrates the dilemma of examining statistics in order to understand the nature of use: "statistics provided by electronic book vendors…show that [our] community uses e-books quite heavily. The data do not show, however, how books are used. For instance, the available statistics show that a book has been accessed but do not differentiate between a one-second click on a title and a five-hour immersion in a book. The data also do not tell us why an electronic version of a book was used instead of the paper version" (p. 286).

In some cases, authors seem to reject more process-based measures of use *in favor of* instances of use. Both Scales (1976) and, more recently, Duy and Vaughan (2006) refer to circulation of journals as *use*, though *citation*, according to the authors, indicates something else. Having been "developed by information scientists", citation measurement

provides “a broader, more research-based view of a journal’s impact” (p. 512). Duy and Vaughan (2006) studied use of journals at and by constituents of their academic institution by comparing electronic journal usage statistics, in-house measures of use, and citation data. Incidentally, they found similarity between the three measures. More interesting, however, is the authors’ terminology. Although they did not measure what was done with items that were downloaded electronically, checked out or taken off the library shelf after that action was complete, the authors equate these actions with “reading an article” and distinguish reading an article and citing an article as “different activities [that] perhaps indicate different usefulness of an article” (p. 516-7).

Additionally, measurements of use as instance are frequently presented as objective data, which can be misleading. James (1985) lamented the lack of any research “that alters our understanding of public library users and use in any significant way” (p. 259), noting that of the twenty-five research reports regarding public library use that he reviewed in preparation for his study, independent and dependent variables were never duplicated, making comparison impossible. He added that *using* a library in these studies tended to refer to *visiting* a library, but the length of the time period in which a use could have taken place varies from study to study as well, causing estimates of library users in the population to vary dramatically (p. 259).

Sub-Dimension IVa: Connector

> Despite numerous improvements to the user interface of online catalogs in recent years, searchers still find them hard to use. (Borgman, 1996, p. 501)

Table 8.

Use *as Connector: Characteristics*

Attributes	Unidirectional, static, librarian/management-centered, objective, political—checking out books to prove libraries should receive funding; disproportionate, dependent on past use, dependent on physical location, dependent on printing, dependent on clicking, connection to object, inefficient, unsophisticated, reliant on web-based sources,
Referents	Catalog, full text databases, indexes, consulting reference list, consulting bibliography, browsing
Antecedents	Accessibility, known item, accessing periodical literature, use of poor search terms, over reliance on online databases
Consequences	Location, failure to locate, poor results, good results; limited understanding of scholarly communication, weakened Information Literacy skills
Context	Use in the life of the library Evaluation of Use/non-use, evaluation of user behavior, comparison of citation to “use”,
Related Concepts	Failure, e-resource usage, classification, organization, access

Use *as Connector* can be seen as a sub-category of the *instance* dimension of the use concept. Connector instances of use are discrete events that lead to other uses—which can represent any dimension of the use concept—of the library or an information resource. For example, an inquiry at the reference desk, while likely measured by the librarian quantitatively, usually leads to another use of the library for the ultimate resolution of the query. The librarian may refer a user to a book for more information on the topic, to a database for an article, or even in the direction of the water fountain or to a service on campus or in the community. Similarly, logging on to a database is not the beginning and end of an instance of use. After one has logged on—*connected*—to a

database, presumably an inquiry will be made of the database, articles read or downloaded, and so on.

Sometimes, uses of resources or materials that are meant to connect a user to another resource actually provide an impediment to further use, a conclusion Radford (1981) reached in his study of library and user failure to locate needed items in an academic library. “Obviously the catalog, in whatever form, represents a significant obstacle to library use, because many of those for whose benefit it has been created are unable to use it effectively” (p. 338). He called out a need for improved user instruction in the essential tools for locating informational materials while reminding librarians that they are “at least partly at fault for having made their libraries unnecessarily complicated and difficult to use” (p. 338).

The *Use Typology*: Summary

Extensive review of the LIS literature reveals that use is a complex phenomenon that is represented in a variety of ways. Depending on the context in which use is discussed (as presented in Chapter 4), use can refer to abstract concept, a process, an instance or transaction. It is likely that additional dimensions of the *Use Typology* will present themselves in the future.

Table 9.

The Dimensions of Use

Use as…	Means…	Example	Example from literature:	Associated Themes/ Metaphors
Abstraction	The discussion of use as a generality, made with no explanation of the operational definition in question.	Discussing student "library use"	"The library is a place for quiet study and research. Any person who, in the opinion of the library staff is habitually not using the library for its intended purpose will be limited to two hours per day." (Myers, 2007, unpaged)	Various
(subtype) Facilitator	Library-specific; use of the library as a physical space for non-library specific needs.	Entering library to visit restroom Meeting with groups or friends Entering library to drink from water fountain Resting in library	"Davis and Larry D. Richmond Jr. should be ashamed of themselves for not even considering the mother's right to have a safe, pleasant experience with her child at the library as they make legitimate use of its resources. That's right, the mother's use of the library is legitimate and the disruptive teenagers' isn't." (Merry, 2006, p. 12)	Library as place Appropriate/ Inappropriate use
Implement	Use of the library as an entity, establishment or symbol; use of information and/or library resources as a tool	Using the library to improve one's education	"It is of paramount importance that the Negro make use of libraries, for his use of libraries and books is the key to Negro progress" (Josey, 1962, p. 161).	Library/ resources as tools

Use as…	Means…	Example	Example from literature:	Associated Themes/ Metaphors
Process	Use as situated with the user; what Dervin and Zweizig refer to as "the library in the life of the user." How an individual uses a library or information to achieve an end.	A doctoral student's 'use' of information and the library in the process of writing a dissertation	"This study reveals that undergraduate students experience information use in a complex, multi-tiered way that needs to be addressed by higher educators when creating information literacy pedagogy." (Maybee, 2006, p. 83) "Use…does not always confine itself…it deals with the loosely structured, amorphous, ill-defined problems of the real world" (Burns, 1978, p. 9)	Library in the life of the user Library/information seeking and use as journey
Instance	The transactional definition of use as measured quantitatively.	Door counts Database log-ons Item circulation counts	"The use measured in this study does not claim to be total use. It is a sample of those uses in which a patron removes a bound volume from a shelf and subsequently returns it to a collection bin, rather than to the shelf." (Rice, 1979, p. 36)	Economic metaphors Predictive measures of item use Stochastic (consumer) based models of library use Library patron as consumer
(subtype) Connector	Sub-set of use as instance; transactions that lead to other uses, e.g., checking out a book, retrieving a journal article.	Searching OPAC Asking reference question Logging on to database	"Despite numerous improvements to the user interface of online catalogs in recent years, searchers still find them hard to use." (Borgman, 1996, p. 501)	Location ("go to the OPAC")

CHAPTER 6

CONCLUSIONS, OBSERVATIONS, AND DIRECTIONS FOR FUTURE RESEARCH

General Observations

This project has been an attempt to clarify the concept of *use* as discussed in the literature of Library and Information Science (LIS). In order to examine the use concept, I have considered its application in a large number of journal articles and related documents. In the process, I have outlined the individual discourses, or thematic contexts, within the literature in which *use* is most frequently discussed, and in the *Use Typology*, identified the multiple dimensions of the concept as they are presented within those discursive themes.

Because this project has considered the scope of LIS literature, a number of attendant themes have appeared, many of which seem to relate directly to the uneasy melding of the respective traditions and concerns of library science, librarianship, and information science. Information Science scholars study the behavior of information and its users. The information and users in question might be, but might not be, situated in a library. IS recognizes that although information management and dissemination are among the main charges of the library, most instances of information seeking and use take place outside the library. On the other hand, librarians and library science scholars (those who study libraries and library-related behavior from a research or theoretical

perspective) are specifically concerned with the library, information, and resources within the library context, and the behavior of library users. Librarians frequently undertake the measurement of *use* in order to make practical and often difficult decisions regarding collection management, staffing, services provision, and facilities management. By virtue of their nature as institutions that depend upon an outside entity for funding, librarians are also charged with demonstrating the cost effectiveness of their services and resources as well as their stewardship of those resources. Frequently, this information must be communicated to library board members, university provosts and presidents, or members of the general public who may have limited working knowledge of the library. Making such decisions based on use studies is problematic because "in practice…there is no agreement on what a 'use,' let alone 'low use,' really is" (Butkovich, 1997, p. 359). According to Broadus (1980), concerns about "methodology and validity" are among the most frequently cited difficulties associated with use studies (p. 360). Butkovich cites several authors who dispute the validity of "single-faceted" use studies that address only one dimension of use, such as circulation or removal of items from shelves (p. 360). The staffing burden and cost associated with use studies mean that they are only able to investigate a single dimension of use.

For these reasons, librarians, library scientists and information scientists each have different objectives and frames of reference in the study of *use*. Thus, the presentation of use in each of these traditions differs dramatically. I believe, however, that even if the three areas can never be fully consolidated, they each have, at least, a great deal to learn from one another.

Contribution and Limitations of the Project

It is my hope that the typology presented in this project will provide practitioners and researchers (and practitioner-researchers) with an improved footing for theoretical and empirical study of *use* and its attendant topics. Conceptual vagueness is a difficult problem for a discipline to overcome, especially if the fundamental concerns of that discipline are changing as rapidly as are those of Library and Information Science.

I believe that the concept analysis method as practiced in nursing provides LIS scholars with a powerful tool to improve understanding of our basic concepts. I hope that by applying a method that is lesser known to the discipline of LIS, this project will contribute to the development of new methodological approaches in the discipline and greater clarity of its fundamental concepts.

Although every sincere effort has been made to contribute to the understanding of the concept of use as discussed in the context of Library and Information Science, this project does have limitations. The sheer volume of material related to the topic of *use* in LIS literature, combined with the frequency of the appearance of the word “use” in the English language presented challenges in the creation of a data set. The volume of material available for analysis made sampling necessary; the initial set of over 4000 individual works was reduced first by type to journal articles, then by sampling. As articles were reviewed, some were determined to be minimally relevant or irrelevant and discarded; other works were added based on citation in one or more works in the data set or due to perceived importance or influence in the field of inquiry. Therefore, the final pool of literature upon which this analysis is based—approximately 200 individual works—is not strictly representative in terms of chronology and other factors of the initial

4000. Because concept analysis is not concerned with proving hypotheses, but rather with gaining understanding of the representation of a concept within a particular context, discipline, or discourse, I do not consider this lack of representativeness to be problematic.

Rather than attempting to establish the ultimate and conclusive definition of use in the LIS context, the objective for this project was to illuminate its multiple dimensions. I do not believe that establishing "the" definition of *use* is necessary or even possible. As Harris (1981) said, "librarians have puzzled over a way to measure the impact of library use for centuries, and no easy solution to this essential question is in sight" (p. 129).

Finally, this project is limited by the same issue that brought it to light: throughout the study, discussion of *use* is connected to a number of poorly defined or understood concepts from LIS and other disciplines, such as information, evaluation, efficiency, relevance, obsolescence, and so on. I would encourage continued efforts to illuminate these and other concepts in the field in order to further improve LIS scholarship and theory.

Future Research

This project presents a number of areas for future research. Although Bookstein (1981), Kidston (1985), and Ercegovac (1997) have examined survey respondents' understanding of what constitutes a library "use", librarians' mental models of the concept have yet to be assessed. Similarly, the ways in which non-librarian stakeholders such as university administrators, library boards, and legislators see and prioritize use would be an illuminating and potentially extremely helpful project.

Although efforts have been made to develop tools to measure the multiple dimensions of *use*, especially in the library context, none has been adopted widely. As outcomes-based assessment becomes more common for institutions such as libraries and universities, measurements of library effectiveness will need to expand to more fully reflect the range of activities associated with them. Similarly, as information seeking activity, including activity that formerly occurred in libraries, continues to move to the web we will need new approaches to understanding the ways in which users seek and use information resources. It is my hope that a fuller understanding of the concept of use will contribute to the development of innovative models to more fully measure the concept, and lead to fuller insight into this complex human process that has been largely reduced to a collection of numbers.

Although measuring use through statistical data is not ideal for understanding the ways in which humans actually use libraries and information resources, approaching the topic from cognitive and affective perspectives of users are time and labor intensive, and may offer little data that can be generalized to a larger population. Cognitive and affective processes are usually obscure, frequently to the individuals in question as well as the researcher. Progress has been made, however, in developing models to address these questions. Much of this work has been reported in the Information Science literature rather than journals targeted at practicing librarians. I hope that findings from these studies will find a larger audience in librarianship and facilitate testing and further development of cognitive and affective models of information use in the applied context of the library. My most sincere aspiration for the research presented in this project is that it can in some way inform these efforts.

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