Synoptic Reference: Introducing a Polymathic Approach to Reference Services

Ross Scimeca and Robert V. Labaree

Abstract

Studies show that reaching beyond disciplinary boundaries can be an effective method for understanding complex research problems and enriching student learning. However, despite the increased attention given to interdisciplinary thinking in higher education, there is much that remains to be understood about the growing centrality of interdisciplinary practice and its assessment. This paper argues that a new, more robust conceptualization of nonsingular disciplinary thinking must be formulated around the philosophical foundation of synoptics. A critical point when this type of learning can take place is in reference services. The paper begins by outlining the emergence of interdisciplinary inquiry in higher education. After reviewing the literature on interdisciplinarity and noting the lack of scholarship concerning applied synoptics in current library literature, it discusses the ways is which synoptics establishes the foundation for a broader based understanding of knowledge that cultivates and encourages a polymathic perspective for the patron. The study concludes by describing how the concept of critical and integrative interdisciplinary thinking, rooted in the worldview philosophy of synoptics, can apply to the practice of reference services and inquiry-based transactions between the librarian and the learner.

Introduction

Institutions of higher learning have enthusiastically embraced the concept of *interdisciplinarity* and its application to teaching, learning, and scholarship. Although the concept of interdisciplinarity is not new, it has gained significant legitimacy in the last thirty years as scholars have sought ways to break out of what they view as restrictive organizational structures ("silos") and an unwieldy division of labor built around narrow

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fields of study (Jacobs & Frickel, 2009; Shumway, 2013). Research suggests that interdisciplinary inquiry and integrated curricula foster two overarching goals important to learning: students are exposed to multiple bodies of knowledge that are not linked through traditional coursework; and students are able "to integrate those bodies of knowledge in pursuit of a shared understanding or answers to a larger question" (Holley, 2009, p. 50). Although the educational benefits of these goals are important, students enrolled in interdisciplinary programs present a unique challenge to academic librarians who participate in reference services. Unbounded by specific discipline-based approaches to problem solving or established methods of inquiry, students in interdisciplinary programs often pose questions that imply a multilayered, heterogeneous, and complex frame of analysis. The challenge is that students rarely perceive this complexity in ways that facilitate sophisticated methods of searching for information beyond Google or the increasingly common, single search box found on library websites.

In this paper, we argue that a new and more robust conceptualization of nonsingular disciplinary thinking must be formulated around the philosophical foundation of synoptics as described by Charlie Dunbar Broad, Robert Maynard Hutchins, Leo Apostel and Jan Van der Veken, and, as we shall see, Wilhelm Windelband. The paper begins with a brief history of interdisciplinarity in higher education. After reviewing the literature concerning how librarians have addressed the growing centrality of interdisciplinarity in higher education, we discuss the ways is which synoptics establishes the foundation for a new understanding of knowledge that cultivates and encourages integrative interdisciplinary (polymathic) thinking. The paper concludes by showing how synoptics can provide a methodology that can apply to the practice of reference services and inquiry-based transactions between the librarian and the learner.

The Emergence of Nonsingular Disciplinary Thinking in Higher Education

Interdisciplinary scholars Julie Klein (1990, 1996, 2008), Lisa Lattuca (2001), Veronica Mansilla (2006), and Joe Moran (2010) have all noted that interdisciplinary inquiry and its application to knowledge production in Western higher education primarily reflects an active engagement with, as well as a critical interrogation of, traditional academic disciplines and the intellectual spaces between them. As Moran argues, the concept of interdisciplinarity is "a democratic, dynamic, and cooperative alternative to the old-fashioned, inward-looking, and cliquish nature of disciplines" (p. 3). The rise of disciplines as the predominant organizational structure of knowledge can be traced back to Greek philosophy and the efforts of Aristotle, for example, to organize knowledge into hierarchical classifications. This construct remained the predominant form of thinking until

the late Middle Ages, when writers like Francis Bacon, René Descartes, Immanuel Kant, G. W. F. Hegel, Auguste Comte, and the French Encyclopedists began to express concerns about what they perceived to be overspecialization and the fragmentation of knowledge (Klein, 1990, pp. 20–21). Concomitantly, the emphasis on reason and rational thought during the European Enlightenment also produced significant changes to how knowledge was organized. The Enlightenment focused attention on methods of inquiry within the disciplines and encouraged greater specialization in learning and the communication of information. Yeo (2001) brings clarity to the act of classifying knowledge and the movement toward increasing specialization by examining assumptions about the organization, communication, and control of knowledge in eighteenth-century English encyclopedias and dictionaries of arts and sciences. In particular, Yeo noted how the explosion of knowledge that was brought about, in large part, by scientific inquiry of the natural world had increased the use of experts to supply content to encyclopedias. The consequences were a shift away from publications that sought to be a "careful abridgement from a well-ordered circle of knowledge" to resources intended to provide exhaustive coverage of specialist disciplines (p. 282).

During the nineteenth century, the dissolution of knowledge into smaller and smaller parts began to reshape the organizational structure of the modern university. What emerged was a loosely coupled conglomeration of authoritative, self-perpetuating "estates" housing scholars deeply devoted to the study of a subject but who were largely disconnected from one another (Becher & Trowler, 2001). Specialization continued to grow as a result of economic necessity, advancements in technology, and the need for professional training in response to external market forces (Oleson & Voss, 1979). The act of intellectual specialization would inevitably stimulate a series of overlapping sequential actions intended to grow the discipline, give it legitimacy, and deepen its domain of research and learning. These actions generally encompassed a community of scholars that would coalesce for the purpose of increasing awareness and understanding through scholarly inquiry, research, and teaching; academic centers and professional associations would be created for the purpose of bringing scholars together to encourage the sharing of research and applied methodologies; and subject-specific journals would be published and specialized conferences held to communicate and add further legitimacy to the new discipline. A final stage of legitimacy formation would be a transformation of the organizational structure of the academy in the form of research institutes, departments, and schools to house, both physically and intellectually, the new discipline. This pattern of fragmentation and hybridization has been repeated again and again throughout the twentieth century in American higher education (Abam, 2004; Berger, 1972; Lattuca, 2001).

While the rapid movement toward intellectual and structural complexity became a hallmark of Western higher education during the twentieth century, so too was an active resistance to the academic "estates" that continued to proliferate and become increasingly differentiated from one another. In his comprehensive work *Interdisciplinary Research: Theory and Methods*, Repko (2012) notes that a key driver of this resistance to specialization was the general-education movement that emerged after World War I and the attempt to unify knowledge around a core curriculum based on the great books of Western civilization. This movement grew stronger against the backdrop of fascism and communism after the 1945 Harvard University report *General Education in a Free Society* was published. According to Repko, the report called for revising the general-education curriculum to "provide a common core of knowledge, beliefs, and values centered on the ideals of freedom and democracy" (pp. 49–50). This second movement was a reaction to the intellectual and social control that disciplines were perceived to have accumulated during the twentieth century. As French philosopher Michel Foucault argued, the disciplines not only represented intellectual domains of knowledge production and accumulation but "a sophisticated mechanism for regulating human conduct and social relations" (qtd. in Repko, p. 50; see also Bisesi, 1982; Wehlburg, 2010).

At this point in the discussion, it is important to note that a noble though flawed attempt to reduce this pattern of intellectual fragmentation, particularly in the sciences, was the application of logical positivism before and after World War II. For example, in the *International Encyclopedia of Unified Science* (1955), all the natural and social sciences were reduced to the logic and language of physics. This reductionism was accompanied by the principle of verification, wherein any synthetic proposition that could not be empirically confirmed or denied was deemed meaningless. In this context, for example, statements of religion and metaphysics were considered meaningless; ethical statements were not propositions, but considered emotive utterances; philosophy consisted only of logic and some areas of epistemology. The logical positivism movement failed because of two major reasons: namely, the problem of hypothetical statements versus observational statements in the various disciplines of the sciences (Quine, 1969); and the unsuccessful attempt at physical reductionism in the syntax of most of the social sciences (Popper, 1972).

Although the proponents of logical positivism failed to reduce specialization, the social and cultural upheaval of the 1960s made significant contributions to the development of interdisciplinarity in higher education. Changes in social mores and new sensitivities to the plight of underrepresented groups and protests against the Vietnam War, as well as the broader college-student protest movement, opened the door to rethinking how institutions of higher learning should relate to society. This

helped initiate calls to reform higher education, including the elimination of traditional forms of disciplinary learning and the development of a more holistic, socially relevant curriculum (Repko, 2012). Related to this was the experimental college movement that led to the implementation of formal, university-wide general-education curricula and innovative programmatic options within traditional institutions (Newell, 2010; Repko, 2012). As Casey (2010) points out, experimental curricula that developed in schools like Evergreen State College in Olympia, Washington, and the Hutchins School of Liberal Studies at California State University, Sonoma provided an impetus for interdisciplinary fields in women's studies, ethnic studies, neuroscience, environmental studies, and others. Administrative support ensured that faculty from divergent disciplines were free to create interdisciplinary programs and formulate integrated curricula outside of the traditional structures of departments and schools. The beginning of a formal commitment to interdisciplinarity during the 1960s was also reflected in the "two cultures" debates of positivism versus interpretivism, and the intellectual chasm between the humanities and the sciences articulated by C. P. Snow. This debate centered on Snow's argument that a critical divide between the two domains created artificial barriers to solving societies' larger problems, and "that specialization had opened a rift in modern society between scientists and literary intellectuals" (Ortolano, 2002, pp. 607–608). His indictment of a "polarity" in the intellectual life of the academy and the debates that quickly followed further challenged disciplinary overspecialization and the pursuit of disparate modes of knowledge production and understanding (Budd, 1989; Burnett, 1999).

By the 1980s, an explicit, programmatic commitment to interdisciplinarity began to take shape. Repko (2012) marks the moment that interdisciplinary studies becomes an academic field with the creation of the Association for Integrative Studies in 1979 and the launching of the association's peer-reviewed journal, *Issues in Integrative Studies*. Today, interdisciplinary programming and integrated coursework plays a central role in guiding broader reforms of higher education, particularly in the area of undergraduate education and graduate-level research. Although the rush to embrace interdisciplinary programs in higher education is not without its critics (Jacobs, 2013), interdisciplinarity is no longer viewed as a marginal experimentation in curricular reform but a well-established epistemological approach to encouraging a more holistic awareness of a research problem, to providing an opportunity to apply innovative methodologies to the study of complex issues, to challenging deeply embedded intellectual assumptions, and to furthering collaborative research (Augsburg, 2006; Bal, 2002; Klein, 1990; Lattuca, 2001; Newell, 2007a; Repko, 2012; Szostak, 2003).

Ironically, the pattern of sequential actions noted earlier that are attrib-

utable to the growth of a discipline and that help grant it legitimacy have contributed to a hierarchical and "often confusing" (Kockelmans, 1979, p. 123) narrative prefixing of nonsingular disciplinary inquiry and knowledge production. For example, some scholars, such as Jacob (2008) and Kanbur (2002), use the term *cross-disciplinarity* to refer generically to all forms of collaboration among disciplines, as well as "any analysis or policy recommendation that is based substantively on the analysis and methods of more than one discipline" (Kanbur, p. 483). On the other hand, Davies and Devlin (2007) consider the concept of cross-disciplinarity as merely the act of "peering" into another discipline, with no collaborative transfer of theory or methods. Multidisciplinarity, interdisciplinarity, pluridisciplinarity, transdisciplinarity, and other, less commonly used conceptual prefixings of disciplinarities all have similar overlapping variations in how they are defined and are often used interchangeably in the literature (see, for example, Martimianakis, 2011, p. 58). For the sake of clarity in our analysis of synoptics, we consider the debate concerning how each variation should be defined as beyond the scope of this study, and agree with White (2011) that unpacking the stratified hierarchy of nonsingular disciplinary inquiry is not required if the overarching goal of analysis is to understand the fragmentation of knowledge. *Interdisciplinarity* is the most common term used in higher education, and therefore it will be used throughout the remainder of this paper to describe broadly nonsingular disciplinary practice.

Performing Interdisciplinarity in Librarianship

The relationship between the intellectual compartmentalization of academic labor and interdisciplinary teaching, learning, and scholarship may be understood as an ongoing struggle among centripetal forces that encourages the consolidation of knowledge into discrete disciplines, such as the ascendance of specialized knowledge and applied expertise over liberal education, the organizational departmentalization of higher education, the dissemination of publications and professional activities intended to promulgate specialized knowledge (Higham, 1979), and centrifugal forces that resist specialization and encourage adoption of integrated and collaborative methods of inquiry and knowledge production. These factors include the general-education movement, efforts to engage in collaborative research to effectively address complex societal problems, and the development of integrated curricula intended to facilitate the acquisition of higher-level learning competencies. As long-standing and deeply rooted parts of the academy, libraries have been caught up in these recurring ebbs and flows. Much of the current literature suggests that librarians struggle to effectively anticipate the impact of interdisciplinary practice on the provision of public services (Bates, 1996; Knapp, 2012; Palmer, 1996). As a consequence, most practice-based research examining

the impact of interdisciplinarity on library services is descriptive or etiologic, with overlapping themes of interdisciplinarity viewed in at least three ways: as a collaborative process in research and teaching between librarians and faculty; as a way to describe the nature of courses being taught; or as a problem for collection-building and reference services.

A large segment of literature focuses on examining the challenges of teaching creative problem-solving skills to students enrolled in interdisciplinary courses or academic programs. Representative of this is a paper by Kutner (2000). Relying upon the experiences of teaching a set of progressively more comprehensive research methods and information-seeking skills workshops to undergraduate students enrolled in the Environmental Program at the University of Vermont, Kutner provides evidence of the incongruity between teaching students how to do effective interdisciplinary research and the traditional organization of knowledge in academic libraries based on the Library of Congress's subject classifications. The author goes on to note how the emergence of online library catalogs and bibliographic databases facilitate the identification and gathering of information across disciplinary boundaries. Burgett, Hillyard, Krabill, Leadley, and Rosenberg (2011) also used a case-study approach to describe collaboration between teaching faculty and librarians. The authors describe the development and implementation of an upper-division course at the University of Washington, Bothell, in support of a degree in Interdisciplinary Arts and Sciences in order to outline key lessons learned from teaching concepts of interdisciplinarity to undergraduate students. Included in their analysis is how collaboration among instructors and librarians improved student-learning outcomes related to information literacy and facilitated a better understanding of the organization of knowledge.

Additional recent studies by Jones (2012) and Shenton and Hay-Gibson (2011) focus on the relationship between interdisciplinarity and information literacy. In her contribution to *Interdisciplinarity and Academic Libraries*, Jones compares the Association of College and Research Libraries' (ACRL) Information Literacy Competency Standards with a model of the interdisciplinary research-process outcomes developed by Allen Repko to highlight the challenges of instructing students on how to effectively frame interdisciplinary research problems and search for information. Jones concludes that interdisciplinary research "emphasizes the teaching of research concepts rather than the use of specific databases or tools" (p. 180), and therefore that librarians must approach instruction from multiple disciplinary perspectives in order to expose students to a variety of resource-based learning tools. Shenton and Hay-Gibson (2011) systematically examine the ways in which information literacy and information behavior can be a catalyst for transdisciplinary-based thought and learning. Their analysis argues that embracing a transdisciplinary stance can help expand the conceptual boundaries of information literacy and

behavior beyond the discipline of library science. Their study stands out as perhaps bringing us closest to exploring the utility of synoptic reasoning applied to library practice when they note that "a further case can be made that (information literacy) provides the pinnacle of transdisciplinarity—the information literate individual will have acquired the knowledge, skills and understanding necessary to find and use information on a wide range of subjects" (p. 168).

Other authors describe the collaboration between the librarian and the instructor as an essential pedagogical approach to delivering successful interdisciplinary classroom instruction (Dinkelman, Aune, & Nonnecke, 2010; Kesselman & Sherman, 2009; McInnis Bowers et al., 2009; Scheepers, de Boer, Bothma, & du Toit, 2010). Kesselman and Sherman documented the value of librarians participating in the development of an interdisciplinary course titled "Food and Nutrition Business Information and Communications" at Rutgers University. In this study, the concept of interdisciplinarity is associated with the collaborative process of course development and the creation of integrated course content derived from the collaborative process. Similarly, Dinkelman, Aune, and Nonnecke (2010) discuss teaching information literacy and communication skills to undergraduate students majoring in horticulture and enrolled in a foundational communications class centered in the English Department at Iowa State University. The authors outline each of five components of resource-based learning and describe feedback from students and faculty. Their findings suggest that "this interdisciplinary model" (p. 143) of collaboration among English, horticulture, and library faculty improves the relevancy of course content to the student's major and the retention of information literacy skills. Finally, it should be noted that many contributors to the book *Teaching Information Literacy Online* (Mackey & Jacobson, 2011) place their case studies of online pedagogy within the context of interdisciplinarity. Most apply it to the process of collaborative teaching and course content, although the case study of teaching an interdisciplinary course on Shakespeare described by Venecek and Giglio (2011) offers a more nuanced picture of instruction viewed through the lens of interdisciplinary learning and student engagement in reflective practice. The goal of the course was to put into practice what the authors considered to be the largely unfulfilled promise that methods of online collaboration and social networking has for interdisciplinary learning in undergraduate education. As Venecek and Giglio state, they wanted to "use this collaboration as an opportunity to decenter the discipline-specific approaches to our own areas of expertise" (p. 10), but found that putting this ideal into practice was difficult. Considered collectively, current literature focusing on delivering information literacy instruction and related issues of resource-based pedagogy generally place the concept of interdisciplinarity within the context of the type of course being taught, or it is used

to describe the collaborative process of teaching between librarians and instructors.

A second segment of the library literature devoted to interdisciplinarity broadly examines its implications for collection development. A review of this literature reveals several themes. Hurd (1992), Kushkowski and Shrader (2013), and Spanner (2001) described the unique characteristics of interdisciplinary research and its potential impact on collection development. Each identified the integrative characteristics of interdisciplinary research and the issues that researchers and librarians confront when "extending oneself into unfamiliar territory" (Spanner, p. 355). A second theme highlights how traditional approaches to collection-building hindered interdisciplinary collection-building. For example, Reynolds, Holt, and Walsh (2012) surveyed librarians to assess the impact of interdisciplinarity on campus and its effect on collection development. The respondents noted a need for better collaboration among subject experts to build interdisciplinary collections, and they stressed the importance of librarians to be involved in discussions of curricular change so that they can better anticipate building collections in support of new interdisciplinary programs. Furthermore, respondents stated that "legacy allocation" (p. 106) funding models and traditional metrics for measuring usage were inadequate in meeting the needs of students engaged in interdisciplinary research. Dobson, Kushkowski, and Gerhard (1996) and Spanner (2001) arrived at similar conclusions based on an analysis of issues of digital access and information-seeking behavior and the research habits of interdisciplinary scholars, respectively. A final theme can be found in case studies that critically examine the adaptive strategies that libraries have deployed to build collections in support of interdisciplinary programs (Dilevko & Dali, 2004; Kushkowski & Shrader, 2013; Michalski & Taub, 2001; Searing, 1992; Steele & Stier, 2000). These authors explored issues of materials assessment and selection, collaborative collection building, and resource allocation through the lens of a specific interdisciplinary field of study. In general, these and other studies that examine the implications that interdisciplinary research has for collection development place the concept of interdisciplinarity within the context of something that librarians must be aware of and responsive to, framing interdisciplinarity as an external force acting on the library that must be provided service and accounted for.

A third overlapping area of practice-based research examining the impact of interdisciplinarity on library services describes the challenges inherent in meeting the often unique and complex information needs of interdisciplinary researchers. These studies generally refer to interdisciplinarity as the frame of mind from which student learners and scholars orient their academic experiences and approach their research. For example, although Newell (2007b) does not write from the perspective of a

reference librarian, his analysis of the interdisciplinary research and writing provided a succinct overview of the challenges that researchers must overcome to effectively transcend disciplinary boundaries and produce integrated scholarship that is otherwise embedded in traditional library-classification schemes, subject headings, and the controlled vocabulary of subject-specific databases. Inferred from his analysis was the role that reference librarians must play in facilitating access to information necessary in the pursuit of interdisciplinary investigations. Other authors identified similar issues associated with the information-seeking behavior of interdisciplinary scholars and the implications these have for reference services (Jamali & Nicholas, 2010; Knapp, 2012; McNamara & Matre, 2002; Palmer, 2010; Woodside, 2009). However, much of this literature focuses on traditional resource-based learning methods rather than analyzing ways that the library can support specific interdisciplinary learning objectives articulated in the broader educational research literature (Repko, 2012).

This review of studies investigating the impact of interdisciplinary inquiry and knowledge production on the library provides a useful foundation from which to examine pragmatic methods of synoptic reasoning applied to reference services. This is important because, to date, there have been no published studies devoted to the concept of synoptics in librarianship as described in works by Broad, Hutchins, and Apostel and Van der Veke; *synoptics* is used almost exclusively to mean synopsis, or the act of summarizing. This can be seen in the idea of the synoptic journal that gained currency in the sciences during the late 1970s (Foster, 1985). For example, a 1979 issue of *Journal of Research Communication Studies* contains an article and a series of seminar papers devoted to synoptic journals. In it, Oppenheim and Price applied the term to mean a "short first publication" that summarizes the contents of a larger scientific paper. In this context, *synoptics* is used to refer to a condensed statement or outline of a larger document, and not as a methodological concept related to framing a worldview state of inquiry. This is representative of how other contributors to the journal issue conceptualize synoptics. A decade later, Atkinson (1989) applied the concept of synoptics in the same way. In his detailed consideration of "the manifestation, uses, and consequences" (p. 202) of writing bibliographical abstracts, he describes four types of activities ranked in general order by how the practice of secondary reference takes precedence over primary reference. The first of the four types is the synoptic activity whereby the bibliographer adopts the role of a secondary author to create an abstract (synopsis) based on a comprehensive interpretation of the meaning of the text. Throughout the article, Atkinson uses the terms *synoptics*, *synopsis*, and *summary* interchangeably. Colglazier (1996) introduced the term *synoptic catalog* to the library lexicon. A synoptic catalog refers to combining the contents of a traditional library catalog with a bookseller's catalog developed at the Richmond Memorial

Hospital Libraries in Virginia. The design represents the adoption of a multifaceted search platform during the early days of the internet. The catalog was considered *synoptic* in the sense that it facilitated integrated access to a broader scope of resources for the user. However, the study gives little insight into how the increased diversity of content facilitates worldview thinking in support of polymathic forms of inquiry. To help fill this gap in the literature, the remainder of this paper expands the concept of synoptics in library practice by exploring the philosophic stance of synoptics applied to reference services using examples of inquiry-based transactions between the librarian and the learner.

Synoptic Reference

It is generally not difficult for a librarian to distinguish between a "fact" question and what we will call a "why" question. For example, a patron comes to the reference desk and asks for the title of a book by Edward Bellamy dealing with utopian socialism. Checking the library's catalog, it is likely that the patron wants to read the book *Looking Backward, 2000–1887* (1888). The call number is provided, and the reference transaction has been completed in this particular instance. However, the patron may return after reading the book and ask why Bellamy proposes such a radical socialism in America. This now becomes a research question. The librarian can show the patron various secondary books that deal with Bellamy's political theories—most importantly, books like Charles Nordhoff's *The Communistic Societies of the United States: From Personal Visit and Observation* (1875), which was published before Bellamy's overview of utopianism in America.

The above example illustrates how a basic reference question may further engender a more complex research inquiry. In other words, the exposition of the "what" question will sometimes mask a "why" question. It is particularly important for academic librarians serving the information needs of lower division undergraduates that this "why" question is really being asked by a patron who asks: "Do we have any books explaining *x* [where *x* is a title of a book or an author]? Why is *x*, as author, stating what he or she wrote, or why does *x*, as title, elucidate or explain the position as it does?" The librarian, in such cases where it is obvious that a "what" question masks a "why," must take an assertive role. Some academic librarians do not feel that an assertive role in reference is appropriate, simply believing that it is more than sufficient to take a passive role of providing the information being asked for by the patron. We reject this assumption. Particularly in academic librarianship, reference questions are often preambles to in-depth, complex research inquires. The librarian must be mindful of this and establish the parameters during the reference interview of the scope of what the patron's information needs are. The following section will give further examples of such questions, and how by using

a certain methodology, synoptic reference can be achieved as a necessary preamble to continued research by the patron with the direct assistance of the librarian.

According to the *Oxford English Dictionary* (Simpson & Weiner, 1989), the term *synoptics* can be used as a synonym for "synopsis": furnishing a general view of some subject. As noted, this is the predominant usage found in the library literature. The second definition is that of a mental act, faculty, or conduct pertaining to, involving, or taking a combined or comprehensive mental view of something. It is this second definition that concerns us, particularly in the context of taking a combined or comprehensive mental view of something, when referring to the concept of *synoptic reference*. It is interesting to note that the second definition was first used by James Martineau (1891) in his defense of Unitarian theology and its relationship to the physical sciences. After assessing the importance of certain ideas from the various sciences to theology, he states that "without this synoptic process, the occupation of the intellect would be gone; and the faith which attends it, faith in the unity of nature, while finding support from the contents of all sciences, is contingent on the special discoveries of none; and cannot be properly treated as the exclusive or characteristic revelation of natural theology" (p. 105). It is important to note that Martineau's statement is not just an argument against scientific reductionism but an affirmation of cross-disciplinary investigation to arrive at truth. This is essentially what synoptic reference implies: an integrative approach to reference services that addresses an idea or problem from various disciplinary perspectives.

As noted, the rise of interdisciplinary studies in higher education is a resistance against the nearer focus of scholarship and the growth of knowledge among specific disciplines. Interdisciplinary studies foster the intellectual attitude to examine certain problems and issues beyond the particular discipline that gave rise to that issue and problem. An example of this would be how the problem of self-consciousness in philosophy gave rise to unique investigations in psychology, anthropology, religion, neuroscience, and history. Most of these unique investigations broadened the original problem from a given discipline into a truly polymathic study in its own right. To help a patron with such a polymathic investigation, a reference librarian in social sciences or humanities must know what subject-specific databases should be searched in order to provide excellent service. Hence, a necessary condition to begin the reference interview for such a polymath study is a working comprehension on the part of the reference librarian to identify the various subject areas of knowledge that are concerned with the topic under investigation. Although this seems obvious to the librarian who is very versed in the classification of knowledge, one can never assume that the patron has this comprehension. Given this, it is usually the "what is *x*" question on the part of the

patron that the librarian must first ascertain in the reference transaction that then may lead to the investigation of the "why is *x*" question. A patron asking the librarian what the concept of the immortality of the soul is in Christianity illustrates this point. An obvious first step is to provide a list of references to this direct question. However, the patron may further want to understand why this concept became part of Christian belief. It is in addressing this *why* question that the *what* question concerning religion will broaden to the disciplines of history, philosophy, and literature.

In the introduction to his work *A History of Philosophy* (1901), Windelband isolates three factors that are important to understanding the formation and development of the discipline's conceptions and problems: the pragmatic, the historical, and the individual. The first factor is what the problem or concept is that is being discussed, the second factor is the comprehension of both the past and present milieu in which the problem or concept is stated and discussed, and the third factor accounts for the uniqueness of the position by a given thinker or school of thought in addressing the problem or analyzing the concept. This can be interpreted as follows: the first factor is a "what" question (for example, What was Kant's solution to the problem of free will?), whereas the third factor is a "why" question (for example, Why did Kant present this solution?). The second factor is also a "what" question (for example, What were the philosophical, political, and theological positions in late-eighteenth-century Europe that Kant knew about and had to answer?). Note that the third factor is dependent on addressing the first two "what" questions.

If we start looking at the patron's question, the librarian can usually assess what the patron is investigating. The patron may be asking for a simple answer, such as: "What is the current population of Detroit?" or "What was the population of Los Angeles in 1910?" These are examples of questions of fact that can be easily answered from either print or online sources. If, however, the patron asks for information about the rise or decline of population in either Detroit or Los Angeles from 1910 to the present, we are presented with a reference transaction that goes beyond a fact question. What is embedded in the question is more than a spectrum of population figures for either city from 1910 to the present; the patron is asking for the reasons behind these statistics. The librarian should come to the realization that this type of inquiry is really a research question that demands the examination of several sources in order to examine what these reasons may be.

In using Windelband's three factors as a schema for addressing this research question, the pragmatic factor would be an analysis of what the population for either city would have been from 1910 to the present. The historical factor would examine what conditions contributed to this variation in population from one decade to the next; the individual factor would examine why these specific conditions occurred. It is at this point

that the librarian should realize that the individual factor can proceed in a number of specific research assessments. Just from this example, the most obvious individual factors influencing the population increase or decrease for any given city would be sociological, economic, environmental, and political. It is at this point that the librarian must work closely with the patron to determine in what direction the research should continue.

By using a scholarly statistical resource in this example, generating the pragmatic factor would be relatively straightforward. A review of population figures for Detroit for each decade from 1910 to 2010 demonstrates that the city lost more than half of its population from 1950 to 2010. If the patron wants to focus on the reasons for this dramatic decrease in population, the librarian must help to investigate what the historical factors were for this decrease. Searching databases like America: History and Life and Urban Studies Abstracts reveals many scholarly articles that focus on one or more of the factors that contributed to the severe decrease in Detroit's population within the past sixty years. Searching for monographs on the history of the city would also be appropriate at this stage of research. In examining these historical factors, the librarian should ask the patron which factor is of the most interest or the one that will be the focus of the research study. It is at this point that the individual factor emerges in this example. As noted, certain factors can be isolated; here, with regard to the decrease in population for Detroit, as stated above, they can be broadly divided into sociological, economic, environmental, and political factors. Once the patron wants to focus the research on one of the above, the librarian should direct and assist in using the appropriate subject-specific databases. For example, if the patron is interested in the social factors, using Sociological Abstracts and PsycINFO could be recommended for continuing the research. This may seem obvious (and it should be for librarians and seasoned academics), but it is not for most student learners. Since the advent of internet search engines like Google and federated search engines on library websites, most students have become accustomed to simply typing in their question, often oblivious to the historical context and the specific-subject areas the question pertains to. This is not just an issue of knowing what databases support a given subject but an example of how most students are incapable of effectively framing the research problem by subject area. This is particularly true in the social sciences, and to a lesser extent in the humanities.

In the above example, the pragmatic factor was obtained quantitatively. For most questions, however, this factor can be obtained by establishing a definition or giving a kind of elucidation. This is generally the case when the reference question involves a concept. To establish exactly what the definition or elucidation of the concept really is, a probing reference interview with the patron is essential. The librarian must identify what specific subject area or areas the concept pertains to. For example, a student

requests recommendations on books about freedom. The reference interview revealed that the patron was concerned with the political concept of freedom and how it relates to the liberty of its citizens. Hence, the metaphysical and psychological concepts of freedom becomes of secondary concern for this patron, if important at all. By establishing the specific definition of the concept, its further elucidation can proceed from the pragmatic factor to the historical and individual factors.

The historical factor is extremely important for two reasons. First, by realizing how a concept or problem developed in successive eras and within specific cultural contexts can limit or broaden any question. The historical factor shows the patron the various temporal dimensions to a given problem or concept; by so doing, the patron can best focus on that dimension that really is of ultimate concern. Second, the historical factor gives the patron a more complete perspective on the concept or problem that is being examined; thus, the librarian is providing the patron with a foundation for further investigation. As we will see, it is from this historical factor that the individual factor is knowingly selected by the patron.

Having been exposed to a comprehensive understanding of the research problem or concept, the patron, aided by the librarian, can then go to those selected databases that focus directly on the individual factor chosen. The librarian must then isolate this individual factor in a generic sense. For example, is the patron's chosen individual factor a question for further inquiry into philosophy, or one of the specialized social sciences, or some other specialized field of research? To sum up, the librarian must examine at least the abstracts of resources from selected subject-specific databases to determine what would be best for that patron's further research. With this in mind, the following schemata would emerge for doing synoptic reference adopted from Windelband's methodology for dealing with the history of philosophy:

- Step 1: Pragmatic factor (elucidation of the concept or presentation of facts)
- Step 2: Historical factor (examining the wider perspective)
- Step 3: Individual factor (examining the subject-specific perspective)

The pragmatic factor is of critical importance when it concerns the elucidation of a concept, particularly in the humanities and the social sciences. Subject specialists in these areas frequently encounter this problem when a patron seeking research help uses a term that covers a number of concepts. In the above example, the patron may be asking about researching contemporary views of freedom. As stated, the librarian must isolate for the patron what specific concept covered in the word *freedom* the patron is really interested in. Is the individual interested in the philosophical uses of the concept, the psychological uses of the concept, or its political uses? Many times, the question is hybrid; for example, the patron will state that

he or she is looking at the concept of freedom from an Islamic perspective. Here, a certain theological elucidation of the term becomes the primary focus for investigation. From that focus, the philosophical and political elucidations may follow. A scholarly dictionary or encyclopedia on Islam would be an appropriate resource from which to begin the research process. In this particular example, it is worth noting that *The Oxford Dictionary of Islam* (Esposito, 2003) divides this concept under the following headings: freedom, free will, and fatalism. If the patron is drawn to the question of free will and fatalism, the latter concept is elucidated as the

> belief of pre-Islamic Arabs that humanity was left to an inexorable fate that determines the course of life, regardless of human desire. Islam replaced impersonal fate with a sense of divine direction of all of life, as well as of personal moral accountability. Nonetheless, affirmations of God's absolute power in the Quran and traditions led some to affirm a different kind of fatalism, sometimes called predestination, in which God's foreknowledge supersedes human free choice. The prevailing theological compromise posited a middle position whereby God's created actions are appropriated by humans. Contemporary Islam stresses the Quranic support of human potential and responsibility under God's guidance. (p. 84)

Once the concept under investigation is understood by both the patron and the librarian, the historical factor must be investigated. Particularly in such a nebulas topic as the concept of freedom from an Islamic perspective, the librarian could direct the patron in finding a monograph on Islamic theology or philosophy that deals with the relationship of this concept to other doctrines held by Islam. There are many academic books dealing with a general historical viewpoint, such as *The History of Islamic Theology from Muhammad to the Present* by Tilman Nagel (2000) and *A History of Islamic Philosophy* by Majid Fakhry (2004). If the patron also requests articles that provide a historical perspective of the chosen concept, the librarian should help the patron search JSTOR, Index Islamicus, or Iter: Gateway to the Middle Ages and Renaissance, with the patron using *history* and the key concept (for example, *predestination* or *fatalism*), plus the narrowing term *Islam*. If these resources are not available, careful searching in ProQuest Research Library, ATLA Religion, and Philosopher's Index databases may yield some relevant articles.

The Importance of Subject Area over General Databases

Before examining how the librarian effectively utilizes subject-specific databases, it is important to state what the overarching concepts are for such a selection. A necessary condition for synoptic reference is that the librarian fully understands what information the researcher is seeking. It is through the reference interview that the librarian can first establish what

subject area or areas the patron is really concerned with. For example, a student comes to you seeking information for a research paper addressing the ethical aspects of abortion. A seasoned librarian should immediately connect the question as a philosophical question concerned with a moral issue. The Philosopher's Index database should be consulted, given that the question involves ethics and that concerns about morality are an integral domain of philosophy. The librarian, however, should not stop here because often the patron is not giving the complete scope of his or her inquiry. Demonstrating the "hits" retrieved from Philosopher's Index, the librarian should always ask the patron if these hits are sufficient for the research paper. At this point, some patrons may say something like "these are interesting, but I am really looking for religious objections to abortion" or "my focus is the feeling of guilt that a woman may have after having an abortion." Here, the librarian must direct the patron to a more specific database; in the first instance, one of the religion databases like ATLA or ProQuest Religion, and in the second instance, one could introduce PsycINFO.

It is imperative that the reference librarian identify the broad subject areas of a reference inquiry, and, if necessary, supplement that inquiry with other databases that best narrow the question to the patron's specific intent. Needless to say, his or her identification of subject areas not only applies to general indexes and abstracts but equally to subject-specific reference resources if the patron is seeking a polymathic perspective. In applying synoptic reference, it is important to never assume that the patron knows what subject area the research question falls within; many times, the research question comes from interdisciplinary courses or is a topic of investigation by scholars in two or more disciplines. The librarian must critically evaluate the reference inquiry and explore by which specific subject areas the inquiry may be addressed.

Librarians should also be mindful that not only are many undergraduate classes interdisciplinary, but many academic monographs and studies use a polymathic approach to address certain questions and problems. A good example is an interesting book by David Abram titled *The Spell of the Sensuous: Perception and Language in a More-than-Human World* (1996). The premise of the book concerns the question of why primitive, nonliterate cultures experience the world more "intuitively" than modern, literate cultures. This is obviously an anthropological inquiry, but the author uses Maurice Merleau-Ponty's phenomenological analysis of perception, along with previous studies on oral tradition from the domains of philosophy, ancient history, and linguistics, to further justify the claims he is making. Given such an investigation, patrons who are interested in topics like the relationship of the oral tradition to perception can be directed to various subject-specific databases in anthropology, psychology, philosophy, linguistics, and history. In librarianship, the concept of knowledge may

be best defined as "organized information." Indeed, the very foundation for library science in both its technical and public services rests on the organization of information into distinct categories of knowledge. In the introduction to a paper by Jack Mills (2004), the following statement is made:

> As a memorable aphorism prefacing his novel *Howard's End*, E. M. Forster gave simply "Only connect." It could claim to be the finest, even though briefest, definition of intelligence we have. To understand anything, whether it is the operation of a complicated mechanism or the complex social factors that underlie almost any human situation, understanding it means seeing the connections. The basic intellectual instrument we use to do this is classification. It is appropriate that libraries, which seek to organize everything in the way of recorded human knowledge should find explicit classification as central to their organization. (p. 541)

This observation is equally important for information transfer during the reference interview and explaining why and how specific reference tools may be used to address the research problem. We avoid the assumption that patrons know the classification of knowledge. As we have stated, it is common to discover that new undergraduate students will be taught the term for an interdisciplinary concept, such as *collective unconsciousness*, or a human factor, such as *road rage*, but do not know what domains of knowledge production investigate the term in question. It becomes essential after the definition of the concept or factor that the librarian identify what subject areas the concept or factor can pertain to. This subject identification will facilitate a more efficient search for relevant information. Using these two terms as examples, let us investigate the options available to the patron.

Before the patron may have asked for help, he or she likely would have searched Google or a similar internet search engine. If you type in *road rage* in Google, an excellent article appears that defines the human factor and divides the article into ten brief sections, from manifestation to external links. Recommended readings are directed to the general public rather than scholarly investigation. So also, one of the articles retrieved from Google on *collective unconsciousness* is concise and directs the reader to Carl Jung's various notions and gives adequate references, further readings (mainly monographs), and external links. No peer-reviewed articles are cited. Peer-reviewed articles are cited in Google Scholar: for *road rage*, approximately 12,100 are cited; and for *collective unconsciousness*, more than 2,300. Doing the same searches in a multisubject, full-text database like ProQuest Research Library, the following results are obtained. Typing in *road rage* in the search box and setting your results for full-text and peer-reviewed reveals 370 articles with abstracts; entering *collective unconsciousness* retrieves 42 records. Multisubject databases like ProQuest Research Library are excellent acquisitions for academic libraries, and

undergraduate students are often taught how to use these databases to show a more academically acceptable alternative to Google.

In what we have stated about synoptic reference, a preliminary search using a multisubject database should be followed by guiding the patron to subject-specific databases. At this point, it is worth noting that prior consultation with teaching faculty can be useful in identifying which databases would be most valuable to students in relation to course content. With regard to both terms, PsycINFO and Sociological Abstracts are obvious discipline-specific databases to search. Depending on the scope of the research problem or the patron's interest, particularly for *collective unconsciousness*, ATLA Religion, Philosopher's Index, and Historical Abstracts may be consulted as well. Using this process of investigation forges an intellectual partnership between the librarian and the patron. The patron realizes that the librarian is there not only to address his or her information needs but is actively participating in the collaborative learning process that results in an integrated acquisition of knowledge.

Conclusion

There has been a significant commitment to interdisciplinary teaching, learning, and scholarship in higher education since the 1990s. As a consequence, there is an abundance of practice-based literature within the field of librarianship that describes key challenges associated with providing instruction to students in interdisciplinary courses or programs, building collections that effectively meet the research needs of interdisciplinarians, and examining the information-seeking behavior of interdisciplinary researchers. Reference librarians must be prepared to address interdisciplinarity from multiple vectors of inquiry, helping patrons to locate resources and understand the ways in which various disciplines organize knowledge that they themselves may not be entirely familiar with. Adopting a synoptic method of reasoning and analysis helps position the librarian to more effectively guide the patron across disciplinary boundaries, and to help the novice researcher move beyond internet search engines, general multidisciplinary databases, and federated library-search pages that may succeed in locating copious citations, but do little to encourage polymathic thinking and problem solving.

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Ross Scimeca, PhD, is the head of the Hoose Library of Philosophy at the University of Southern California (USC). He is subject specialist for philosophy, religion, linguistics, anthropology, and the history of science. He received his doctorate in philosophy and his MLS from USC. His recent publications include a coauthored study exploring the philosophical treatment of truth in librarianship. His current research concerns new perspectives in library instruction for undergraduates and investigating how current college students identify the library as a personal place beyond the library's importance for study space and research uses.

Robert V. Labaree, EdD, is the political science and international relations librarian at the Von KleinSmid Center Library for International and Public Affairs, University of Southern California (USC), where he has been the subject specialist for international relations and political science since 1995. He received his doctorate in Higher

Education Leadership from USC and an MLS from Louisiana State University in Baton Rouge. His recent publications include a study that describes life histories as a method for documenting the experiential relationships between libraries and library users. His current research includes two projects: a study proposing a set of information literacy competency standards and general performance indicators applied to students engaged in interdisciplinary research and knowledge production; and a funded project to critically examine the statements of professional concerns by candidates for ALA officer and councilor positions over the past thirty years to document how patterns of change and transformation within the practice of librarianship have been expressed by those seeking such positions of leadership.