Knowledge of Information Sciences

ePortfolio of Information Sciences

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**Introduction**

Information is both ubiquitous and highly contextualized in today’s world. The academic study of information – and its practical applications in information services – seeks to understand the nature of information, how it is best organized, and the behaviors of those encountering it. Therefore, three of the core concepts that are central to information sciences include: the “Long Tail” of information resources, scholarly communication, and Dervin’s theory of “sense-making.” These concepts reflect multiple dimensions of information: the expansive information society and the economic, socio-cultural, technological, and political issues of access (the "Long Tail"); the creation and organization of information as contributions to our canon of knowledge (scholarly communication); and our complex and contextualized information behaviors (sense-making). The links on the right lead to essays on each of these concepts. The illustration below (click to see the full image) maps the three concepts and the examples I introduce to describe each concept in action.
The “Long Tail” of Information Resources

"We can see now that information is what our world runs on: the blood and the fuel, the vital principle.” – James Gleick (2011)

Information resources are commodities, and the digital world continually reshapes how they are bought, sold, and disseminated. The “Long Tail” is a concept, popularized by Chris Anderson (2008), describing access to commodities relative to their popularity or status in the marketplace. In the old days of analog resources, “hits” dominated every market, from music records to television shows. Companies placed the most popular content on their shelf spaces, since these items were sure to sell to large audiences. However, in this static environment, the focus on hits resulted in very little individual choice. Only a small percentage of content deemed bankable, a “Short Tail” of the pool of content produced, was made available to consumers.

However, the digital environment strikingly alters our understanding of marketing. Eliminating costs of shelf space, online commercial enterprises like Amazon and Netflix succeed in offering both the hits and more obscure content. Anderson conceptualizes this new market as the “Long Tail.” The further one travels down the Long Tail, the more obscure and lesser-used items one finds on the market. In making these items open and accessible, they are discoverable through consumer recommendations, and mutually benefit retail sales and consumers. Furthermore, Anderson urges companies to drop prices, making content more affordable for consumers while remaining profitable for companies.

Implications of the Long Tail in Academic Libraries

What does this have to do with information? As Dempsey (2006) argues, the Long Tail extends beyond the function of providing access to a lot of material. It allows potential
consumers to be made aware of a resource’s existence and creates an efficient supply and demand system. Depending on niche and obscure material to enhance scholarship, academic libraries provide extensive access to the Long Tail of information resources through a variety of collections and services. For example, making sense of user needs for information along the Long Tail becomes vital for academic libraries making collection development decisions (Holt, 2007). Also, institutional repositories store and provide access to the intellectual output of an academic community, making them powerful tools for niche research (Jantz & Wilson, 2008). Providing access to the Long Tail of scholarship, while initiating information literacy efforts to promote discovery of these resources, allows academic libraries to support the research missions of their parent institutions.

The Long Tail in Action

An example of the Long Tail in this context is the reevaluation of the “80-20 rule” through electronic resource access. This rule claims that 80 percent of usage comes from 20 percent of an overall collection. When applying the Long Tail concept, this ratio changes to 50-20, as more usage comes from a new market of traditionally lesser-used material (Anderson, 2008). With the advent of serial subscription bundles, or “big deals,” libraries purchase large sets of electronic journals, in addition to individually-chosen journal subscriptions based on user need or popularity. Starr and Williams (2008) found the current usage statistics of biomedical e-journals to reflect Long Tail activity, since access of low-used journals may not be available without the existence of big deals. The Shopfel and Leduc (2012) study comparing usage statistics to electronic journal subscriptions reveals distribution rates close to Anderson’s 50-20, indicating characteristics of the Long Tail within big deal subscription packages.
Ensuring Access

The Long Tail powerfully demonstrates recent changes in the information landscape: how users find and make sense of information resources dramatically shifts as more becomes readily available digitally. In academic contexts, information professionals need to continually evaluate – and, in many cases, digitize – resources that fall along the Long Tail, in order to acquire, manage, and provide access to them for scholars and institutional stakeholders. Access to Long Tail ensures that content is available regardless of its obscurity, and that information seekers encounter no barriers in resolving their information needs. This is challenging in the world of electronic resources, in which materials are licensed rather than physically bought outright. Perpetual access to content paid before serials are canceled, ceased publication, or handed off to different publishers is a continual concern for electronic resource managers attempting to ensure long-term access to the Long Tail (Glasser, 2014).

Scholarly Communication

“Communication lies at the heart of research. It is as vital for research as the actual investigation itself, for research cannot properly claim that name until it has been scrutinized and accepted by colleagues.” – A.J. Meadows (1998) (p. ix)

“Where is the knowledge we have lost in information?” – T.S. Eliot (1969)

Human knowledge progresses through a complex sociocultural and sociotechnical system called scholarly communication (Borgman, 2007). When scholars ask questions about the world, they pursue research activities to observe or measure a particular phenomenon. The resulting
discourse, the research report, illuminates the contexts, methods, findings, limitations, and significance about the project to a vast audience of academics and lay readers. Thus, scholarly communication is just that – it is the set of processes that allows scholars to “communicate” with those in their research community and to contribute to the canon of human knowledge.

Networks of Knowledge

Scholarly communication holds four purposes: discovery and dissemination of new knowledge, recording and documenting knowledge, peer review of documentation to ensure quality control, and preserving and archiving the resulting product (ACRL, 2013). These activities take place within a larger research lifecycle that begins with initial ideas and proceeds through to proposal writing, locating partners or funders, research processes, sharing initial results, and publication (Das, 2015). In other words, scholarly communication is the sharing stage of the research project: the preparation, dissemination, and communication of results with the broader academic community. This necessarily involves many individuals with different roles and functions: researchers, collaborators, peer reviewers, publishers, and readers (Borgman & Furner, 2005).

The social milieu of scholarly communication also depends on attribution. Citations, or abbreviated references to other scholarly works, establish links between current research and previously published knowledge. Consequently, citations perform many functions: as a collection, they demonstrate a researcher’s knowledge of the scholarly literature on a particular topic; as individual “pointers,” they provide producers of scholarship with appropriate credit and lead readers to previous research so that they may access it for reuse. Bibliographic citation styles are not arbitrarily designed and implemented, but socially grounded in the norms of
effective argument and discourse among different scholarly communities. Therefore, citation choices reflect “their cognitive and cultural value to a community, and each repetition helps instantiate and reproduces these conventions” (Hyland, 1999, p. 362-363).

Social interactions, then, are a major motivation in knowledge creation and dissemination. As Garvey (1979) states, scholarly communication is held together by “the psychological interplay between the self-interest of individuals and that of social groups, each of which controls the other” (p. 17). Scholarly output leads to prestige, promotion, and tenure, but researchers produce content to also participate in a culture of formal (e.g., peer-reviewed journals) and informal (e.g., conversations in a conference or blog) communicative activities. Scholars focused on a particular discipline or research area participate in “invisible colleges,” or large groups of scholarly collaborators linked by formal and informal communication networks (Crane, 1972, p. 35). Furthermore, scholarly information is created and distributed not in isolation, but within a large, complex social infrastructure.

The Stewards of Scholarly Communication

For libraries supporting and advancing the research efforts of their parent institutions, decisions regarding the management, dissemination, and access of scholarly materials are of paramount importance. Scholars need reliable access to a large wealth of information resources in order to conduct their research. Today, such resources are increasingly costly and difficult to locate, requiring libraries to carefully pull together expertise, funding, and collaboration in order to provide them to their constituents. Consequently, academic librarians are experts in scholarly communication: building and maintaining collections, facilitating access, understanding policy, and advocating for new models to information resources required of their students, faculty, and
staff. For example, many academic librarians recruit faculty on their campuses to submit their work to open access journals (i.e., gold open access) or institutional or disciplinary repositories (i.e., green open access) (Suber, 2012). By advocating for open access, academic librarians ensure that the work of their scholars is being seen and cited – i.e., fully incorporated into the scholarly communication system.

The Knowledge Environment

A common bibliographic instruction session conducted by the information services librarians at Rhodes College consists of asking students to select a news article at CNN, MSNBC, or other news-centered website, and to try to find the original, peer-reviewed scholarly article referenced in that story within the library’s online databases and journal collections. As students attempt to make these connections, they often observe that the news stories poorly cite the scholarly sources and provide vague accounts of research data and findings. This workshop reflects a huge challenge in today’s information environment: with the proliferation of information technology and the Internet as channels to our information-seeking, it is increasingly difficult to locate trustworthy information. Scholarly communication upholds a standard of knowledge-sharing amidst this environment. It ensures that research activities have been valid, subjected to a critical peer review, and shared among experts for further debate and discussion within a canon of related knowledge. Understanding scholarly communication empowers users to locate, evaluate, and use information more effectively - that is, to be information literate. Moreover, scholarly communication places human knowledge along the Long Tail of information resources, which then become assessed as relevant knowledge to information users in the lens of the sense-making model.
Sense-Making

“...It is in the realm of information behavior that we ought to find humans at their most creative, least constrained by external forces, because so much of individual information is private.” – Brenda Dervin (1992).

“Sense-making” is a theory and methodology developed by communications scholar Brenda Dervin, describing the internal processes individuals do in order to “make sense” of their experiences (Dervin, 1992). As people move through their daily lives, they may encounter a situation that produces a gap or discontinuity halting their movements, subsequently requiring them to define the gap and build bridges to come to a solution. Individuals display a variety of internal characteristics such as attitudes, thoughts, and feelings in their attempts to “make sense” of the information resources that systems or institutions might offer. In the information sciences, we study this as information behavior: users have information needs, formulate strategies to resolve the needs, stumble upon barriers to their answers, put their answers to use, and develop routines or habits for future information seeking. Moreover, sense-making is an approach to understanding the user’s perspective in information seeking. Below is Dervin’s illustration of sense-making, prominently featuring the central concept of the gap or discontinuity.
Applications of Sense-Making

Information professionals integrate the sense-making theory into interviewing techniques, both in user studies research and in applied information services settings. In research, interviewers use open-ended questions to illicit time and space-specific moments of information seeking from participants. One example of this approach is a study of community-problem solving in a public library context, which used multiple interview and focus group methods to uncover the situation, gaps, and resolutions of a distributed information use environment (Durrance, Souden, Walker & Fisher, 2006).

In practice, information professionals can use sense-making to more fully understand the user’s need and assist in bridging the gap to that need. Dervin & Dewdney (1986) introduce the idea of neutral questioning, the strategy of determining a user’s information need by asking broad, non-leading questions. For example, a library visitor might approach an information desk and ask the question: “Is it true that Steve Jobs invented the Internet?” In this case the information need is ambiguous: does the user need a simple yes or no answer, or does he or she require a more complex overview of the history of the Internet’s creation? An information professional could use neutral questions to fully answer the question as it is intended by the patron. One might ask some variation of “How did you come to this question?” to assess the situation, “What are you trying to understand?” to understand the gap, and/or “What kind of information are you looking for?” to determine the information use. These tactics can help information professionals uncover the complete and relevant details of a user’s information need – that is, how the user makes sense of their situation and the strategies needed to bridge their gaps.
Self-Construction in Information Seeking

Sense-making assumes that humans are “situated at cultural/historical moments in time-space and that culture, history, and institutions define much of the world within which the individual lives” (Dervin, 1992). When people encounter a gap in their knowledge, the subsequent processes of defining and bridging of that gap are deliberated internally by the individual. These internalizations may differ among people and be constructed under different times, spaces, cultures, communities, and contexts (Dervin & Frenette, 2001). Due to this variability in how people make sense of their situations, information seeking is diverse and dynamic. Users then need a vast catalog of access to the “Long Tail” of information resources, created and verified during the scholarly communication system, in order to incorporate information into their knowledge base and resolve their particular need. Information professionals incorporate user perspectives when developing information technologies, collections of content, and communication techniques that can best move users from gap to information use (Dervin, 1991). Moreover, the information sciences are more than just a collection of best practices in describing, organizing, and accessing information. Rather, the discipline is a dynamic discovery of: individual information seeking, the diversity of these encounters and behaviors, and the ways in which information professionals can build upon and improve systems in alignment with the spectrum of information seeking activities.
References


