The Paradoxical World of Young People's Information Behavior

Andrew K. Shenton

Division of Information and Communication Studies,
School of Computing, Engineering and Information Sciences,
Northumbria University, UK

Although thousands of articles about information behavior have been published in recent years, little attention has been given to the paradoxes that emerge in terms of either the features of such behavior or the investigation of it through research. This article draws on a wide range of studies, many conducted by the author, to explore 10 particular paradoxes that are apparent in the information behavior of children and young people. Several indicate discrepancies between theory and practice, whereas others show that when some priorities are addressed, other areas of concern may suffer.

Introduction

Information behavior (IB) is complex. It takes place in a multiplicity of environments as individuals employ varying strategies with a diversity of materials, resources, and organizations to meet a range of needs associated with the various roles, issues, demands, and personal interests arising in their lives. All the research that has been undertaken and theories that have been derived in attempts to understand the intricacies of IB have drawn on such disparate disciplines as anthropology, communication, health, management, politics, psychology, and sociology (Shenton, in press a). The number of articles, as well as the variety of material to which they refer, is considerable. An estimate by Case (2006) indicates that in the period between January 2001 and December 2004 alone, over 2,000 sources of potential relevance to IB came into existence, and hundreds of new items relating to it are appearing each year. Despite the complexity of the area and the volume of research about to IB, little attempt has been made to explore the paradoxes that are apparent with regard to both IB itself and the study of it. In this article, I seek to highlight these anomalies in terms of young people's IB and incorporate insights from a range of research projects conducted in the last 35 years. I give particular weight to my own investigations. Although somewhat different in focus in that the paradoxes presented here tend to counterpoint two key features of the modern "information world," the article was inspired by the work of Dervin (1976), which identifies a series of questionable assumptions that have hindered research into IB.

The Paradoxes

Connecting Users with Information

The first two paradoxes concern access to information. Few would dispute the pertinence of one of Urquhart's (1981) foremost principles of librarianship, namely, that libraries are for users, and indeed these organizations put in place many systems and procedures to ensure that as far as possible, information materials are readily available to users seeking to satisfy their needs and wants. The classification system, for example, arranges artifacts in logical categories, and the catalogue provides entry points by which end-users, after forming statements of their needs, can trace items in the collection that are relevant to their purposes. The spatial arrangement is designed to sequence the stock so as to enable searchers to find on the shelves the material they require. Fines are imposed in order to increase the likelihood that volumes that are legitimately borrowed are returned on time and can then be made available to others.

Yet much empirical research with young people reveals that far from facilitating information access, these measures often form barriers and act as deterrents to use. In terms of classification, a research project carried out in northeast England found that several teenage participants considered the Dewey Decimal Classification Scheme employed in their school library unhelpful and confusing (Shenton, 2007b). One youngster wrote of her preference for "different categories"; another did not find the groupings systematic; and a third called for "better organisation of books" (p. 40). The mismatch between the keywords employed in library catalogues and the language that young people themselves use to represent their information needs has long been a matter of concern. Poston-Anderson and Edwards (1993) offer some valuable insights into the discrepancy. Working with adolescent girls, they realized that the search terms they generated were not topic-based and were characterized by "a degree of urgency or intensity that did not appear to be evident in the institutional terms" (p. 29). Difficulties encountered by youngsters in finding desired items on the library shelves have also frequently been reported. Moore and St. George's (1991) 10-12-year-olds struggled to translate Dewey numbers into actual spatial locations. More recently, Laverty (2002) in her research discovered that the location of books "on the shelves was hindered by students' lack of understanding of shelving conventions" (p. 227). The deterrent effect of fines on young people's use of libraries is noted by Meyers (1999). In five of the 10 cities in which the survey that she reports took place, teenagers cited fines as a barrier. Meyers writes, "Some stated that it is easier to buy a book than to worry about due dates and accumulated fines" (p. 44). As Flint (1979) points out, "Systems and catalogues should be servants, not oppressors" (p. 72), and ironically, all the practices mentioned are indeed intended to assist users, at least as an overall body. Paradox 1 may be summarized as follows: *The effects of a library's procedures with regard to users' attitudes and behavior are frequently inconsistent with the organization's aims.*

The second paradox forms one of the great conundrums in modern information retrieval, namely, that in order for users to access the material that they are pursuing, information systems often demand that they demonstrate knowledge on the very matter of which they are ignorant. Shenton (2007e) describes two specific incidents that bear testimony to the problems that young children may encounter in this regard. For a homework assignment, one 8-year-old participant was required to learn about static electricity, but this phrase was not used by the teacher who introduced the task. She merely demonstrated how a sheet of transparent plastic could be made to stick to another surface and asked her pupils to investigate why this happened. Although the boy usually relished the opportunity to find information in his children's encyclopedia, he knew that this strategy was inappropriate in these circumstances. A 7-year-old boy faced a similar problem when he wished to know more about what he could see by examining a range of everyday materials and substances under a children's microscope. Again, the accepted names and terms for what he was observing were unknown to him. Both children admitted that their knowledge of the subject was so limited that they "didn't know what to look it up under" (p. 335). In the face of such problems, it is no surprise that Hirsh (1997) believes that domain knowledge is a key factor in the effective retrieval of information from an electronic system.

Difficulties like those recounted by the two boys may, of course, be encountered by information-seekers of all ages. Many readers will no doubt have experienced the problem that when using the *help* facility offered by a computer software package, it may be far from easy to find out about the feature one wishes to use unless one is knows its name. Nevertheless, the limitations in the vocabularies of young children render them especially likely to encounter this barrier. The danger is great when a young child faces the task of using a dictionary to learn how to spell a word. He or she must be able to make a reasonably accurate attempt at spelling the word in order to look it up. One of the great strengths of the *Aurally Coded English (ACE) Dictionary* (1995), which is especially appropriate for young children, is that because the entry points are those of the sounds of a word rather than its spelling, such circularity is avoided. Moseley (*ACE Dictionary*), who pioneered this type of dictionary, explains a key problem that faces the user of its ordinary equivalent: "The vowel sounds are the biggest source of difficulty; there are more than two hundred vowel spellings associated with the eighteen basic sounds. That leads to uncertainty and delay when looking up words in a standard dictionary" (p. i). Paradox 2 may be summarized as follows: *In order to access information in a source, the user must often apply knowledge that he or she does not yet possess.*

Users' Attitudes and Strategies

The third paradox deals with the contrast between the actions and the opinions of young people. Evidence of the popularity of electronic information

sources, and the World Wide Web in particular, has been abundant in LIS literature since the late 1990s. Work by Criddle (1998), Barry-Rodriguez (1999), Herring (1999), and Meyers (1999), for example, attests to the current widespread use of electronic materials. More recently, empirical research reported by Herring and Tarter (2006/07); Madden, Ford, and Miller (2007); and Shenton (2007d) reveal its continuing popularity. Shenton discovered that the Internet formed easily the most popular information resource among his teenage respondents when they were aiming to address either school-inspired needs or leisure-related wants. Nevertheless, although Pickard (2004) found that motivation to use the Internet among her participants was often high initially, they were easily discouraged when it did not meet their expectations, and the male research participants especially were highly critical of the resource. Many of the young informants in Shenton and Dixon's (2003b) study were heavy users of the Web, but they too were often disillusioned. They highlighted an inability to find on occasion the desired information, felt swamped by the overwhelming volume of poor quality material, and admitted the temptation to succumb to distractions on the Web that could deflect them from purposeful information-seeking. Loertscher (2003) believes that much of the appeal of the Internet lies in its convenience and ready availability. In this respect, comparisons can be drawn between young people's exploitation of the Web and their asking other people for information. Shenton and Dixon (2003c) found that the latter course of action is also frequently taken by young people, even though a range of problems can arise and in several instances, the inquirers in their study were aware that information of dubious quality had been provided. They conclude that for some information-seekers, "the temptation to pursue a convenient method appeared to outweigh the desire to make the effort demanded to consult a more authoritative source" (p. 230). Paradox 3 may be summarized as follows: *Young people are often highly critical of particular information resources, yet continue to use them habitually.*

The fourth paradox was identified by Graef (2000). He notes that in an age in which the world of information is expanding and increasing in complexity, users' conceptual tools for dealing with it are becoming simplified. Graef's argument may best be understood in relation to the Web, and although he makes his point in general terms, it would certainly seem true in terms of young people. The Internet offers an environment of sound, still photographs, moving images, and text. Documents in many languages are available. New material produced especially for the Web is provided as well as older documents originally in paper form. The creators of content on the Web are diverse, and their work is characterized by wide-ranging degrees of authority and objectivity. What is available varies in its currency, and there may be few clues as to its age.

Little evidence indicates, however, that amid such heterogeneity youngsters using the Web exercise sufficient discrimination in their approaches to search efficiently or effectively and arrive ultimately at the best material for

their purposes. In recent years, I have conducted four research projects involving teenagers in an English high school catering for learners aged 13-18 (Shenton, 2007b, 2007d, in press b; Shenton & Johnson, in press). While watching pupils at work, I have noticed that a particular pattern is typically apparent when they are finding and using information for assignments. It involves going immediately to an Internet browser, accessing a search engine (almost always Google), entering an obvious keyword or phrase to represent the matter in question, clicking on the link to the first site listed, examining it cursorily for the information required, copying any appropriate content, pasting this into a Word file, and accepting the material with a minimum of editing. This behavior is consistent with Smith and Hepworth's (2007) observation that at worst, pupils undertaking school assignments "merely present unprocessed information downloaded from the World Wide Web" (p. 5). Empirical research conducted by other investigators reaffirms lack of sophistication in the information-seeking approaches taken by youngsters. Williams (1999), for example, reports, "In response to the question 'How do you find things on the Internet?' the general reply was that 'I just tell it what I want to know'" (p. 319). Chung and Neuman (2007) conclude that their teenage research subjects believed that "the process of information retrieval was a simple type-and-click operation" (p. 1514). It would appear that such attitudes are not limited to school pupils. Jackson and Banwell (2005) discovered that further-education students in northeastern England also performed a series of actions that effectively simplified the information search. Some are identical to those I have observed. They include restricting their searches to Google and cutting and pasting "information into essays without passing it through their brains" (p. 42). These actions are, of course, far removed from the widely advocated approach of making an informed decision on the appropriate media in relation to which a search should be carried out, carefully determining the tools to be employed, varying the specificity of the search terms in the light of the initial results, accumulating a body of useful information, and constructing an end-product on the basis of an understanding that has been developed from all the material.

In the late 1970s, long before the arrival of the Internet in schools, libraries, and the home, Burke (1978) highlighted how a preoccupation with immediacy was leading to the presentation of information that might be used "to foster understanding and reason" (p. 294) in such superficial forms that opportunities for the user to gain full comprehension of the key issues were limited. In Burke's words, content was being sacrificed for stimulus. The argument may well apply today in terms of system facilities for information retrieval if not the material itself. In the current electronic age, if it becomes clear to developers that the young user is paying scant attention to the higher-level facilities that an information system may offer and is prepared to make no more than a "quick and dirty" search, this raises the possibility that only the most basic methods of retrieval will be

provided in the future, and the consequent potential of the system to make a meaningful contribution to learning may be reduced. Paradox 4 may be summarized as follows: *Despite the sophistication of today's information age, youngsters frequently follow a basic formula for action when finding and using information.*

Relevance of Advocated Practices

The fifth and sixth paradoxes relate to further deviations from seeking information from textbooks. Many models of information skills attach great importance to the assessment by learners of the accuracy of the information that they find in sources. One of the 10 stages in the EXIT model proposed by Wray and Lewis (1995) is that of "evaluating information" (p. 7). The checklist for "using information well" offered by the National Council for Educational Technology (1993) emphasizes the importance of the individual making decisions as to what material he or she may discard. And Marland (1981), in his seminal *Information Skills Curriculum*, suggests various criteria that should be borne in mind by pupils when they are deciding which information resources to use. Accuracy is a key factor for consideration in all these models. Graef (2000) believes that in practice, material may be selected by users after testing the content in front of them against their past experience. In many instances, this may involve comparing the information with one's own knowledge of the subject. Speaking on the BBC radio program *The Wikipedia Story* (2007), McHenry, however, draws attention the futility of this approach, arguing, "You really have to know the subject you're looking up to the point where you needn't be looking it up." This situation is similar to the paradox discussed above in which a reader has to know the approximate spelling of a word in order to find it in an ordinary dictionary. Here too the individual's knowledge may be such that information-seeking action is unnecessary. An alternative strategy for verification may see users comparing the information involved with that in other sources. Yet if all the sources to be scrutinized take the form of Web pages, those chosen to provide confirmation must be selected with care because the accuracy of these also may be open to question, and they may even be based on the material found in the source in question. The production of such secondary sources can in fact easily lead to a vicious circle of inaccuracy. Paradox 5 may be summarized as follows: *Verification of information in sources is widely advocated, but strategies for implementing this process may be of questionable real value.*

An assumption that typically underpins linear models of information skills and those offering a series of prompting questions in particular such as the work of Marland (1981) and Coles, Shepherd, and White (1982) is that sources are not considered by the learner until the nature of the information need has been clarified. In contrast, much research into IB would suggest that these two aspects genuinely interact rather than form separate stages in a chronological sequence. Indeed, knowledge of information

sources may on occasion lead the process. This gives rise to a paradox somewhat akin to that of the chicken and the egg. Perhaps the various steps should be recast as elements whose position is variable in the overall information-seeking experience. By no means all models of information skills are linear in character, of course, and indeed those with rigidly placed rather than fluid elements tend to be older frameworks devised during the 1980s. Lowe and Eisenberg (2005) cite a series of models more recent than those of Marland and Coles et al. when making their claim that although information problem-solving is characterized by the use of specific skills, their application is iterative and flexible.

In exploring the criteria that influence the choice of topic for academic assignments, Shenton and Dixon (2004a) discovered that the second most frequently articulated factor among their participants was that of information availability. After they had been briefed on the work to be tackled, pupils who took this line used their awareness of sources that were known to be accessible to them to determine the selection of topic and thus in broad terms the nature of the information need. Some youngsters opted for topics that they knew were addressed by books either at home or owned by relatives; for others, the information source took the form of people. In most cases, the pupils whose decisions were based on information availability selected their topics soon after being presented with the task. The behavior of one 14-year-old differed, however, as her decision was made after interaction with an information source. Asked to investigate for a history project any of the leaders of countries taking part in World War II, she entered the term *war leaders* when interrogating the *Encarta* CD-ROM encyclopedia and decided to concentrate on Mussolini after discovering that more information appeared to be devoted to him than to any of his counterparts in other countries. Similarities can be identified here between this girl's behavior and the actions of individuals experiencing the "prefocus exploration" stage in Kuhlthau's (1988) "information search process" (p. 238). Kuhlthau explains how learners at this point are intent on locating relevant information with a view to finding a focus for their work.

For Shenton and Dixon's (2004a) research participants, the interactive nature of information needs and source investigation was evident again later in their project tasks. After they had located material in response to issues of an initially general nature, several youngsters began to appreciate that information was required on increasingly precise aspects, as their understanding of the topic and its issues developed. Shenton and Dixon call needs of this type "progressional subject needs" (p. 27). Sometimes there were shortcomings in the subject coverage provided in the sources already consulted, which prompted the pupils to look further afield.

Although the researchers might well have predicted the emergence of needs of the progressional type—and indeed years before the project, needs of this kind had been noted by commentators such as Faibisoff and Ely (1976), Krikelas (1983), and Westbrook (1993)—another way that materials

led to information needs was entirely unexpected. Shenton and Dixon (2005) discovered that "source-dependent needs" also came to light (p. 25). These arose neither because the youngster was keenly interested in a particular topic nor because the individual was motivated by external pressure such as a school assignment. Rather, a source known to provide information on an area of *passing* interest was readily available. In none of these cases was the youngster sufficiently enthusiastic about the subject to investigate it in other ways and would not have sought other sources had the information not been available from the favored provider. A few information needs relating to the content of television shows emerged in response to cues during or after the program. Sometimes the need disappeared when the source ceased to be available. Paradox 6 may be summarized as follows: *Information skills models that take a linear, rather than dynamic, perspective often imply that sources are investigated once the need has been determined, but in real life, instances frequently emerge where a knowledge of sources triggers an information need.*

Priorities for the Information Specialist

The seventh paradox may be termed the *information professional's dilemma*. Few no doubt would dispute the importance of either librarians learning more about the information needs of youngsters or the wisdom of seizing opportunities to provide effective user education. However, Shenton (2007c) draws attention to how these two aims may work in opposition. Where user education equips individuals with the knowledge, skills, and understanding to search independently for information highly successfully, especially through exploitation of the Web, which forms such an accessible information resource for many youngsters in environments as diverse as the home, the school, and public libraries, users will come to rely less heavily, if at all, on assistance from the information specialist. Consequently, the practitioner will have less opportunity to develop through the reference interview insights into clients' information needs. In addition to providing experience on which the specialist can draw in the future, the articulations of the inquirer in the exchange in the reference interview can be recorded in a log of the type outlined by Norton and Goodgion (1980) and may form an important source of data for formal research. The fact that such research is based on real inquiries and uses the same language as that used by clients when the needs are expressed bestows on the work a naturalistic dimension often lacking in research that relies on gathering data through more contrived methods such as questionnaires. With any decline in the profile of the reference interview, the importance of finding out about information needs in other ways becomes correspondingly greater. The specialist may fall back on inferential approaches such using existing theories of child development, community profiles, and coverage of the young population's more general needs, as well as drawing on personal experience and anecdotal evidence from col-

leagues. Paradox 7 may be summarized as follows: *Library goers' reduced reliance on the information professional that may result from effective programs of user education may deprive such staff of key opportunities to learn more about the information needs of their patrons.*

Terminology

The eighth paradox is the first of two that relate to problems associated with language. In North America especially, the term *research* is applied by many teachers and librarians to project work in schools. Kuhlthau (1994) describes a research assignment as one that requires learners to address a matter that demands information beyond a course textbook, but that may be found through investigation of an organized collection of materials. Ultimately, the individual will make some form of presentation of what has been learned. In higher education, however, the term *research* is given another meaning. Here it involves the first-hand collection, analysis, and use of data to explore a particular issue; published material on the subject is likely to be employed only in the preparation of a literature review and in closing reflections on how the new discoveries relate to the established knowledge base. Indeed, Preece (1994) argues that research in the true sense must increase "the sum … of human knowledge" (p. 5), and he contrasts this with the kind of activity that Kuhlthau describes. He asserts, "the re-arrangement of what is already known is not in itself the essence of research unless it leads on to … new knowledge" (p. 6). Thus *research* can be said to have entirely different meanings. Although few words are as ambiguous as *research*, another with a similar diversity of connotations is *original*. An expression such as *original material* can, of course, refer to old documents produced at the time of a certain event, yet the phrase may also be applied to the new work of a pupil that represents his or her personal understanding and that is not merely plagiarized from existing sources.

In addition, other terms are often used in a broader sense than may be assumed on first consideration. Although *information-seeking* might justifiably be deemed to refer specifically to the *active* pursuit of information, and indeed a definition of this kind is favored by Case (2007) in one of the foremost textbooks on IB, Erdelez (1999) takes a different line. She believes information-seeking to be "a generic term for all types of information acquisition" (p. 25). A comparable view is taken by Kari (1998), who argues that information-seeking includes the accidental discovery of information as well as more purposeful behavior. Paradox 8 may be summarized as follows: *Certain phrases used in the "information world" that are designed to explain are ambiguous and may actually cause confusion rather than enlightenment.*

The penultimate paradox embraces the fact that some expressions relating to IB or the information world may be regarded as oxymoronic. Perhaps the most obvious examples are *passive attention* and *passive search*, which Wilson and Walsh (1996) propose to represent forms of information acquisition. These authors concede that the latter in particular "seems like a

contradiction in terms" (p. 23). A similar argument may be made about the expression *information literacy*. Historically, as the *New Oxford Dictionary of English* (1998) notes, "literacy" has meant "the ability to read and write" (p. 1076), but in recent years, its use has been widened and applied to a range of other skills. *Visual literacy*, for example, is a term now frequently used in the fields of fine arts and media studies, and the expression *information literacy* is, of course, today one of the major buzz phrases in our own discipline. Nevertheless, dissenting voices can still be heard among LIS scholars and practitioners. In a trenchant and controversial article, Williams (2006) claims that information skills are insufficiently fundamental to "amount to a 'literacy.'" It is also pertinent to observe that the expression *information literacy* has not gained widespread adoption beyond the discipline of LIS. In a study of the quality of school libraries in northeast England, Shenton (2007a) noticed that the phrase was not even used by OFSTED, the body responsible for monitoring the country's educational standards in schools, in any of the 44 school inspection reports that he read. Moreover, Smith and Hepworth (2005) point out that the term is not explicitly used in England's National Curriculum.

Perhaps less contentious is the phrase *electronic library*, although here as well the combination of two ideas would appear to place the notion of a library of this kind in direct opposition to what has historically been intended by the word *library*. The *New Oxford Dictionary of English* (1998) states that *library* derives specifically from the Latin word *librarius*, which may be defined as "relating to books" (p. 1063). It may be argued, of course, that the meaning of *library* too has been broadened of late. Bawden (2001) claims that the word can no longer be assumed to refer to "a physical stock of books, journals, etc.," but has come to represent any "organised collection of information resources, partly or wholly digital, and networked" (p. 97). Nevertheless, research reported by Nesset and Shenton (in press) has found that many young children's understanding of *library* does not include such a concept. Working with 45 Canadians between the ages of 8 and 10 in May 2006, Nesset and Shenton discovered that the overwhelming majority of the young informants still thought of libraries as providers of books, and only three indicated that they associated libraries with computers. Paradox 9 may be summarized as follows: *New expressions in library and information science frequently juxtapose contrasting ideas or apply long-accepted terms in unfamiliar contexts, thereby creating uncertainty.*

Research

The 10th and final paradox refers to a possible mismatch between constructs that have evolved in research to represent users' behavior and the reality of this behavior as it is practiced. Various attempts have been made in the last 35 years to construct typologies of young people's information needs. Perhaps the best known are those by Minudri (1974), Gratch (1978), Walter (1994), Latrobe and Havener (1997), Shenton and Dixon (2003a), and

Agosto and Hughes-Hassell (2006a, 2006b). Seldom, however, does such work acknowledge one of the key barriers in any attempt to identify patterns in young people's information needs, namely, the fact noted by Herman (1983) and Gross (2000) that many are unique to an individual. Gross goes so far as to assert that some derive from youngsters' "specific life situations and … are idiosyncratically their own" (p. 10). Any attempt by a researcher to create broad groups in the face of such diversity is bound to result in a set of superficial constructs that are unlikely either to offer insight into the reality of individual needs as they are actually experienced or to do full justice to the particular personal circumstances that inspire them.

A similar issue arises when researchers look to formulate models that reduce IB to a series of stages and sequences. Because educators frequently encourage learners to develop flexible problem-solving perspectives to finding information and stress that no single method or formula can be applied successfully in every case, coupled with the fact that many youngsters employ their own expedient methods to provide short cuts to information (Shenton & Dixon, 2004b), it would seem simplistic for a researcher to try to create a single model that represents, even in generalized terms, all IB evident in the group under study.

It is not only outcomes of research such as typologies and models that may be considered to present only a partial picture of IB. Further problems emerge in the notions underpinning concepts themselves. Although a wide range of definitions of information-seeking exist, a key theme in many is that it involves the construction of knowledge. Kuhlthau (1999), for example, explains how information-seeking can be viewed as a means by which "a person is actively constructing a new understanding from the information encountered" (p. 15). Marchionini (1995) takes a similar view, describing information-seeking as "a process in which humans purposefully engage in order to change their state of knowledge" (p. 5). Notwithstanding that the work of Shenton and Dixon (2004a) discussed in coverage of paradox 6 above reveals that certainly some youngsters do develop their knowledge of a subject during their interactions with information sources, there is ample evidence to suggest that the kind of learning that Kuhlthau and Marchionini describe is often limited, because in academic contexts, after finding information pertinent to their work, pupils have frequently been merely copying material. Baldwin (1992) particularly associates this practice with the use of difficult works where the young reader is presented with too much information and does not understand it. She concludes unequivocally, "Children gain little knowledge from copying" (p. 26). An indication of the possible scale of the problem is provided by McGregor and Streitenberger (1998), who report that almost half their teenage Texan pupils undertaking an English assignment "put little effort into really making sense of their topic" (What do the errors mean? para. 3). Many spent much time transcribing material from information sources. Most of this activity merely "led to inappropriate copying or plagiarism"

(What do the errors mean? para. 5). Perhaps the most damning single instance in which work associated with finding and using information has led in no sense to the construction of knowledge is supplied by Laverty (2002). She recounts the experience of one female pupil and includes her own account: "I did a project on the pyramids of Egypt … I ended up with a folder of 12 pages of information and I didn't understand a word" (p. 227). The final 10th paradox may be summarized as follows: *Even concepts and constructs that have been developed specifically to aid our understanding of users' behavior may misrepresent the nature of aspects of it as it takes place in real life.*

Conclusions

In their entirety, the 10 paradoxes reveal issues associated with IB that impinge on the lives of those in such varied groups as users, information professionals, and researchers studying the phenomenon. Some are inherently practical and relate either directly to interactions with information or to strategies for providing access to it, whereas others may be considered one step removed in that they pertain to scholarship in the area. The focus of this article is that of issues affecting children and young people, yet some might well be applied to information users of any age. Similarly, "the information professional's dilemma" can arise in a range of libraries, not only those specifically catering to youngsters.

The purpose of this work is not to propose solutions, but rather to highlight the complexity of certain aspects of IB. Although the paradoxes are here explored in a single sequence, they can also be grouped according to one of several categories.

1. Many of the paradoxes identified address discrepancies between the relatively esoteric world of principles, models, concepts, and specialist vocabulary on the one hand and the more practical territory of everyday understandings and users' real-life information-related situations on the other.

2. Closely related to these paradoxes are those in which trends associated with the development of the information world differ from, or at worst are incompatible with, the needs, actions, or abilities of users.

3. Those in the third group of paradoxes demonstrate how by attending to one particular matter of concern, an individual or organization may take action that adversely affects another matter that may seem unrelated. This pattern arises in terms of both users and information professionals. With regard to the former, for example, convenience may be favored at the expense of accessing accurate information, and attempts by information specialists to promote independent information-seeking by clients may result in fewer opportunities to learn about their needs.

4. The final paradox does not fit comfortably into any of the previous categories and must be considered separately. Here ambiguities arise in

the use of language. Whereas the paradoxes in categories 1 and 2 tend to deal with variations between users and those in other groups such as information professionals and researchers, and category three paradoxes involve dilemmas that may be faced by a particular individual or organization, differences in the understanding of terminology are here shown to emerge across researchers and between schoolteachers/librarians and higher education staff.

Table 1 offers a summary by setting down all the paradoxes in turn and attaching each to one of these categories.

The scope of this article is deliberately restricted to anomalies in the field of information behavior that may be detected specifically in the LIS domain. Many of those addressed are especially concerned with the information-seeking dimension. Productive territory for future coverage of paradoxes may well be found in identifying pertinent discrepancies between issues that emerge in information science and contrasting themes

Table 1

Relationship Between the 10 Paradoxes and the Four Categories
that Summarize their Themes

Category	Paradox
1	Paradox 5: Verification of information in sources is widely advocated, but strategies for implementing this process may be of questionable real value.
	Paradox 6: Information skills models that take a linear, rather than dynamic, perspective often imply that sources are investigated once the need has been determined, but in real life, instances frequently emerge where a knowledge of sources triggers an information need.
	Paradox 9: New expressions in library and information science frequently juxtapose contrasting ideas or apply long-accepted terms in unfamiliar contexts, thereby creating uncertainty.
	Paradox 10: Even concepts and constructs that have been developed specifically to aid our understanding of users' behavior may misrepresent the nature of aspects of it as it takes place in real life.
2	Paradox 2: In order to access information in a source, the user must often apply knowledge that he or she does not yet possess.
	Paradox 4: Despite the sophistication of today's information age, youngsters frequently follow a basic formula for action when finding and using information.
3	Paradox 1: The effects of a library's procedures with regard to users' attitudes and behavior are frequently inconsistent with the organization's aims.
	Paradox 3: Young people are often highly critical of particular information resources, yet continue to use them habitually.
	Paradox 7: Library goers' reduced reliance on the information professional that may result from effective programs of user education may deprive such staff of key opportunities to learn more about the information needs of their patrons.
4	Paradox 8: Certain phrases used in the "information world" that are designed to explain are ambiguous and may actually cause confusion rather than enlightenment.

that arise in education. One would appear to lie in the fact that although the aim of producing information-literate children is likely to meet with universal support, rarely do information skills form a significant component in teacher training programs. This reflects an overall lack of synergy across the librarianship/education divide.

References

Aurally Coded English (ACE) Dictionary (2nd ed.). (1995). Wisbech, UK: LDA.

Agosto, Denise E., & Hughes-Hassell, Sandra. (2006a). Toward a model of the everyday life information needs of urban teenagers. Part 1: Theoretical model. *Journal of the American Society for Information Science and Technology, 57*(10), 1394-1403.

Agosto, Denise E., & Hughes-Hassell Sandra. (2006b). Toward a model of the everyday life information needs of urban teenagers. Part 2: Empirical model. J*ournal of the American Society for Information Science and Technology, 57*(11), 1418-1426.

Baldwin, Karen. (1992). Information skills in the primary classroom. *Reading, 26*(3), 25-30.

Barry-Rodriguez, Heidi. (1999). *Kid's catalog and kid's catalog web: A review of CARL's OPACs for children.* Retrieved November 5, 2007, from:
http://www.ils.unc.edu/~barrh/kidscat.html

Bawden, David. (2001). The shifting terminologies of information. *Aslib Proceedings, 53*(3), 93-98.

Burke, James. (1978). *Connections.* London: Macmillan.

Case, Donald O. (2006). Information behavior. *Annual Review of Information Science and Technology, 40*, 293-327.

Case, Donald O. (2007). *Looking for information: A survey of research on information seeking, needs, and behavior* (2nd ed.). San Diego, CA: Academic.

Chung, Jin Soo, & Neuman, Delia. (2007). High school students' information seeking and use for class projects. *Journal of the American Society for Information Science and Technology, 58*(10), 1503-1517.

Coles, M.H., Shepherd, C.A., & White, C. (1982). The science of library and book skills. *School Librarian, 30*(2), 200-207.

Criddle, Sally. (1998). And they're off! *Library Technology, 3*(4), 58-59.

Dervin, Brenda. (1976). Strategies for dealing with human information needs: Information or communication? *Journal of Broadcasting, 20*(3), 324-351.

Erdelez, Sanda. (1999). Information encountering: It's more than just bumping into information. *Bulletin of the,American Society for Information Science, 25*(3), 25-29.

Faibisoff, Sylvia G., & Ely, Donald P. (1976). *Information and information needs. Information Reports and Bibliographies, 5*(5), 2-16.

Flint, Cathy. (1979). Tomorrow's children: Children in a changing society and their changing library needs. In Judith Baskin (Ed.), *Alternative futures: Proceedings of the 20th biennial conference, Library Association of Australia, Canberra, 26-30 August, 1979* (pp. 62-74). Sydney: Library Association of Australia.

Graef, Roger. (2000). *The illusion of information*. BBC Radio 4, July 23.

Gratch, Bonnie. (1978). *Final report of the Pioneer Library System, LSCA No. 78-19, Central Library Young Adult Project.* Rochester, NY: Rochester Public Library.

Gross, Melissa. (2000). The imposed query and information services for children. *Journal of Youth Services in Libraries, 13*(2), 10-17.

Herman, Gertrude B. (1983). "What time is it in Antarctica?" Meeting the information needs of children. *Reference Librarian, 7/8*, 75-82.

Herring, James. (1999). Developing curriculum services via the Internet. *Library Association Record, 10*1(4), 223-225.

Herring, James, & Tarter, Anne-Marie. (2006/07). Progress in developing information literacy in a secondary school using the P.L.U.S. model. *School Libraries in View, 23*, 3-7.

Hirsh, Sandra G. (1997). How do children find information on different types of tasks? Children's use of the Science Library Catalogue. *Library Trends, 45*(4), 725-745.

Jackson, Maureen, & Banwell, Linda. (2005). Mind the gaps: "A" level students and IL. *Library and Information Update, 4*(1-2), 42-43.

Kari, Jarkko. (1998). Making sense of sense-making: From metatheory to substantive theory in the context of paranormal information seeking. Paper presented at the *Nordis-Net workshop-(Meta)theoretical Stands in Studying Library and Information Institutions: Individual, Organizational and Societal Aspects*, Oslo. Retrieved November 5, 2007, from: http://www.paranet.fi/paradocs/tutkimuksia/kari1998a.pdf

Krikelas, James. (1983). Information-seeking behavior: Patterns and concepts. *Drexel Library Quarterly, 19*(2), 5-20.

Kuhlthau, Carol C. (1988). Developing a model of the library search process: Cognitive and affective aspects. *RQ, 28*(2), 232-242.

Kuhlthau, Carol C. (1994). *Teaching the library research process* (2nd ed.). Metuchen, NJ: Scarecrow Press.

Kuhlthau, Carol C. (1999). Accommodating the user's information search process: Challenges for information retrieval system designers. *Bulletin of the American Society for Information Science, 25*(3), 12-16.

Latrobe, Kathy, & Havener, W. Michael. (1997). The information-seeking behavior of high school honors students: An exploratory study. *Journal of Youth Services in Libraries, 10*(2), 188-200.

Laverty, Corinne. (2002). The challenge of information seeking: How children engage in library work. *Feliciter, 5*, 226-228.

Loertscher, David. (2003). The digital school library: A world-wide development and a fascinating challenge. *Teacher Librarian, 30*(5), 14-24.

Lowe, Carrie A., & Eisenberg, Michael B. (2005). Big 6TM Skills for information literacy. In Karen E. Fisher, Sanda Erdelez, & Lynne McKechnie (Eds.), *Theories of information behavior* (pp. 63-68). Medford, NJ: Information Today.

Madden, Andrew D., Ford, Nigel J., & Miller, David. (2007). Information resources used by children at an English secondary school: Perceived and actual levels of usefulness. *Journal of Documentation, 63*(3), 340-358.

Marchionini, Gary. (1995). *Information seeking in electronic environments*. Cambridge, UK: Cambridge University Press.

Marland, Michael. (1981). *Information skills in the secondary curriculum.* London: Methuen.

McGregor, Joy H., & Streitenberger, Denise C. (1998). Do scribes learn? Copying and information use. *School Library Media Research, 1.* Retrieved November 5, 2007, from: http://www.ala.org/ala/aasl/aaslpubsandjournals/slmrb/slmrcontents/volume11998slmqo/mcgregor.cfm

Meyers, Elaine. (1999). The coolness factor: Ten libraries listen to youth. *American Libraries, 30*(10), 42-45.

Minudri, Regina. (1974). Library and information services for young adults and students. In Carlos A. Cuadra & Marcia J. Bates (Eds.), *Library and information service needs of the nation: Proceedings of a conference on the needs of occupational, ethnic, and other groups in the United States* (pp. 155-161). Washington, DC: US Government Printing Office.

Moore, Penelope A., & St. George, Alison. (1991). Children as information seekers: The cognitive demands of books and library systems. *School Library Media Quarterly, 19*(3), 161-168.

National Council for Educational Technology. (1993). *Information skills in action.* Coventry, UK: National Council for Educational Technology.

Nesset, Valerie, & Shenton, Andrew K. (in press). Are children's "library" attitudes behind the times? Some insights from a small-scale Canadian study. *New Review of Children's Literature and Librarianship.*

New Oxford Dictionary of English. (1998). Oxford, UK: Oxford University Press.

Norton, Diana, & Goodgion, Laurel. (1980). Documenting information requests. *School Library Journal, 26*(8), 27.

Pickard, Alison. (2004). Young people and the Internet. *Library and Information Update, 3*(1), 32-34.

Poston-Anderson, Barbara, & Edwards, Susan. (1993). The role of information in helping adolescent girls with their life concerns. *School Library Media Quarterly, 22*(1), 25-30.

Preece, Roy. (1994). *Starting research: An introduction to academic research and dissertation writing.* London: Continuum.

Shenton, Andrew K. (2007a). OFSTED and libraries in first and primary schools: Some observations on expectations. *Journal of Librarianship and Information Science, 39*(2), 99-111.

Shenton, Andrew K. (2007b). Attitudes to books and school libraries among teenagers in an English high school. *New Review of Children's Literature and Librarianship, 13*(1), 31-57.

Shenton, Andrew K. (2007c). Viewing information needs through a Johari Window. *Reference Services Review, 35*(3), 487-496.

Shenton, Andrew K. (2007d). The information-seeking behaviour of teenagers in an English high school. *School Librarian, 55*(3), 125-127.

Shenton, Andrew K. (2007e). Causes of information-seeking failure: Some insights from an English research project. In Mary K. Chelton & Colleen Cool (Eds.), *Youth information seeking behavior II: Context, theories, models, and issues* (pp. 313-364). Lanham, MD: Scarecrow Press.

Shenton, Andrew K. (in press a). Sources of research in information behaviour: What are the core journals? *Information Research Watch International*.

Shenton, Andrew K. (in press b). Use of school resource centre-based computers in leisure time by teenage pupils. *Journal of Librarianship and Information Science*.

Shenton, Andrew K., & Dixon, Pat. (2003a). Just what do they want? What do they need? A study of the informational needs of children. *Children and Libraries, 1*(2), 36-42.

Shenton, Andrew K., & Dixon, Pat. (2003b). A comparison of youngsters' use of CD-ROM and the Internet as information resources. *Journal of the American Society for Information Science and Technology, 54*(11), 1029-1049.

Shenton, Andrew K., & Dixon, Pat. (2003c). Youngsters' use of other people as an information-seeking method. *Journal of Librarianship and Information Science, 35*(4), 219-233.

Shenton, Andrew K., & Dixon, Pat. (2004a). Information needs issues emerging from school assignments. *Education Libraries Journal, 47*(2), 21-29.

Shenton, Andrew K., & Dixon, Pat. (2004b). Issues arising from youngsters' information-seeking behavior. *Library and Information Science Research, 26*(2), 177-200.

Shenton, Andrew K., & Dixon, Pat. (2005). Information needs: Learning more about what kids want, need, and expect from research. *Children and Libraries, 3*(2), 20-28.

Shenton, Andrew K., & Johnson, Andrew. (in press). Pupil use of a school intranet's library pages. *Aslib Proceedings*.

Smith, Marian, & Hepworth, Mark. (2005). Motivating learners to become information-literate. *Library and Information Update, 4*(1-2), 46-47.

Smith, Marian, & Hepworth, Mark. (2007). An investigation of factors that may demotivate secondary school students undertaking project work: Implications for learning and information literacy. *Journal of Librarianship and Information Science, 39*(1), 3-15.

Urquhart, Donald. (1981). *The principles of librarianship*. Leeds, UK: Wood Garth.

Walter, Virginia A. (1994). The information needs of children. *Advances in Librarianship, 18*, 111-129.

Westbrook, Lynn. (1993). User needs: A synthesis and analysis of current theories for the practitioner. *RQ, 32*(4), 541-549.

Wikipedia Story. (2007). BBC Radio 4, July 24.

Williams, Peter. (1999). The net generation: The experiences, attitudes and behaviour of children using the Internet for their own purposes. *Aslib Proceedings, 51*(9), 315-321.

Williams, Peter. (2006). Against information literacy. *Library and Information Update, 5*(7-8), 20.

Wilson, Tom, & Walsh, Christina. (1996). *Information behaviour: An inter-disciplinary perspective – A review of the literature.* London: British Library Research and Innovation Centre.

Wray, David, & Lewis, Maureen. (1995). Extending interactions with non-fiction texts: An EXIT into understanding. *Reading, 29*(1), 2-9.

Author Note

Andrew K. Shenton is a former lecturer in the Division of Information and Communication Studies in Northumbria University's School of Computing, Engineering and Information Sciences in England. He gained a doctorate in 2002 after an investigation of young people's information-seeking behavior

and has had over 50 papers published in Italy, the US, and his native Britain. They have been cited in books, journal articles, and conference papers, as well as forming recommended reading for modules of university courses that have included doctoral programs. Andrew currently divides his time between writing, mentoring higher-degree students, and working with pupils in the resource centre of a school in northeast of England. He can be contacted by mail at 92 Claremont Road, Whitley Bay, Tyne and Wear, NE26 3TU, UK. He can also be e-mailed at ashenton1@hotmail.com.