



8-1-1990

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Recommended Citation

Tenopir, Carol, "Online Information Anxiety" (1990). *School of Information Sciences -- Faculty Publications and Other Works*.

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□ ONLINE DATABASES □

BY CAROL TENOPIR

Online Information Anxiety *yes*

"INFORMATION explosion," "information pollution," "information overload," "information anxiety"—these are all now familiar phrases to describe the proliferation of information in our lives and our inability to cope with it. Too much information, or more precisely too much data, is often worse than too little. People are unable to process, understand, and make sense of the steady stream of data that bombards them.

As librarians we contribute to the information overload problem in our attempts to provide the best possible collections and service. Libraries with hundreds of thousands or millions of volumes, more magazines that cover ever more specialized topics, and better ILL cooperation contribute to information overload. But it is technology that has made the problem widespread and overwhelming.

End user workstations providing access to CD-ROM databases with hundreds of megabytes of information, networked OPACs linking collections from dozens of libraries, and intermediaries providing exhaustive search printouts with hundreds of references or reams of facts contribute in a more customized and personal way to information glut. We provide more efficient and faster access to more and more information.

Information anxiety

Although he doesn't address libraries or intermediaries directly, Richard Saul Wurman in his book *Information Anxiety* (Doubleday, 1989) describes this phenomenon and offers some solutions. Wurman's book was quoted often at the 1990 National Online Meeting and he spoke at the recent Information Industry Association and the Special Libraries Associ-

ation conferences. Librarians are listening because we are both part of the problem and part of the solution.

Wurman defines information anxiety (IA) as "the black hole between data and knowledge. It happens when information doesn't tell us what we want or need to know." Intermediaries typically provide lots of data, whether the data are a list of bibliographic references, texts of magazine articles, or tables of numbers. Such raw data do not necessarily *inform*, in fact they may do the opposite by confusing or overwhelming. Data do not become information and information doesn't become knowledge until the receiver understands.

The very nature of the searcher-client relationship contributes to information anxiety, according to Wurman, because "we are also made anxious by the fact that our access to information is often controlled by other people." This anxiety, together with normal problems experienced whenever two people try to communicate, often makes it difficult for intermediaries to fully recognize the real information needs of their client. Relevance-judging studies have shown that intermediaries and end users often differ in what they think is relevant. Intermediaries tend to judge more citations as relevant and often think searches are more successful than do the clients.

Telltale signs

Wurman provides a list of telltale behaviors that indicate when dealing with information has become a problem. These include:

chronically talking about not keeping up with what's going on around you;

feeling guilty about that ever-higher stack of periodicals waiting to be read;

nodding your head knowingly when someone mentions a book, an artist, a news story that you have actually never heard of;

finding that you are unable to explain something that you thought you understood;

giving time and attention to news that has no cultural, economic, or scientific impact on your life;

reacting emotionally to information that you don't really understand—like not knowing what the Dow Jones really is, but panicking when you hear that it has dropped 500 points;

thinking that the person next to you understands everything you don't;

being too afraid or to embarrassed to say "I don't know";

calling something information that you don't understand.

For clients of our intermediary online search services we could add:

always asking for a comprehensive search because you are afraid something good will be missed;

feeling compelled to read every abstract in a 200-item printout and feeling guilty when you lose interest after 50;

having that nagging thought that something better must be in the database, but the intermediary missed it;

asking for searches in obscure databases and for articles in sources you will never be able to locate;

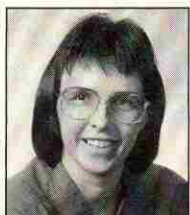
telling your colleagues that you could do a better job searching, even though you haven't used your Knowledge Index account since your free time ran out;

getting excited about full-text databases, but always taking the printout to the library stacks to get the "real" thing;

routinely requesting an online search at the beginning of a new project even though you know you won't change your plans no matter what the literature shows.

Prescriptions for anxiety relief

Wurman recommends that every person become a better information processor to overcome IA and offers prescriptions to achieve that goal. Some of the things he prescribes can be directly translated to the reference librarian's interactions with clients. In fact, some of his recommendations



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read like a prescription for conducting a good reference interview or developing a database search strategy.

"As you learn about something," Wurman recommends, "try to remember what it is like not to know. This will add immeasurably to your ability to explain things to other people." Reduce yours and your client's "guilt feelings over the unread by recognizing that the quantity of information is such that you can't read [or retrieve] everything." "Think about opposites. When you have a problem [or database search], think of one solution [or search strategy], then of its opposite. When you choose a direction, think about what would happen if you went in an opposite direction."

Part of the solution lies in improving communication skills. To improve communication Wurman offers a list of tactics, all of which are appropriate to the reference interview and several of which have been shown in research studies to enhance librarian-client interactions. "Apply the same attention to listening that you do to talking" [really listen to what clients are saying and what their true information need is]. "In appropriate situations, lightly touching someone's arm as you speak will improve the attention you get from the listener" [this has been demonstrated to work well in library reference situations]. "Never nod your head at something you don't understand. Practice saying 'Could you clarify that?' or 'I'm not sure I understand what you are talking about' in front of your mirror." "Ask a lot of questions that can't be answered yes or no."

Online solutions

Intermediaries have searching tools that can help reduce information glut. As appropriate, restricting search strategies by date ranges, by language of original publications, and by type of literature lowers the number of citations retrieved. In full-text databases some searchers use length of article as a criterion. Longer articles are rightly or wrongly presumed to have more value, or at least to provide more for the money.

An important skill for the search professional is to know the relative strengths and weaknesses of different databases. Careful database selection helps to ensure that items retrieved are at appropriate levels or viewpoints (searching a database such as Magazine Index for a high school student, but Medline for a medical stu-

dent) and can reduce the percent of items retrieved that may be esoteric or inaccessible. Searchers can select those databases that cover the core literature in a subject; H.W. Wilson's longstanding policy of indexing only sources selected by a panel of librarians is appreciated by searchers who have found that more is not always better.

These techniques, however, do not provide all of the kinds of filters necessary in today's information-

overloaded society. When a searcher restricts a search to 20 citations because the high school student is only willing to read that many or the public library patron cannot afford to pay for any more, there is no way to make sure that these 20 items are the best or most recent English-language citations from one major database.

A few full-text systems allow the searcher to select or sort retrieved items by the number of times search words occur in the documents. The

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BRS occurrence table displays how many times and where search terms appear; VU/TEXT allows retrieved items to be sorted and displayed by word frequency. Although such statistical measures have been demonstrated to help predict relevance, they do not help predict the importance or quality of an article.

Quality filters

One technique to limit a search to important articles is to restrict a search to review articles or bibliographies. An article type or document type field in a database allows searchers to restrict to specified types of literature. Presumably review articles give users more for their money (and the author of a critical review acts as a quality filter). The citation files, Science Citation Index and Social Citation Index, are unique in allowing a searcher to check how many times an article has been cited by subsequent articles, giving a relative value of impact. However, you must start with a known item and search for how many times it has been cited, a two-step process at best.

Other than by citation counts, it is difficult to judge the relative merits of articles. What is well written or important for one person may not be for another. Most database producers shy away from making such judgments, fearing libel cases or lacking suitable criteria by which to judge quality. Indexers may not have the subject expertise or experience to judge the merits of an article and meritorious research isn't always recognized as such when it is first published and put into databases.

An interactive solution to this dilemma was posed at the Supersearchers forum at the Online '89 meeting. Someone recommended that searchers be allowed to attach comments to records online to help provide an interactive and continually updated quality filter of sorts. Subsequent searchers of that file could choose to use or add to this information as they wished. Although this searcher approach is intriguing, online systems see it as impractical and perhaps even violating the integrity of the files.

No one, not database producers, online vendors, nor most searchers, is willing to take responsibility for such an activity on a formal basis. The practical solution for now lies with the information professional's traditional role of information guide

and translator. We must do more post-processing, analysis, and interpretation to help our users understand and cope with the massive amounts of information that can be retrieved. We must not be afraid to be selective or to exercise our judgment as needed to present a more filtered or understandable product. Finally, we must help our users learn to be more selective and be better "information processors." Wurman predicts the following will help people cope with IA: better

and easier-to-use reference tools and more "directories to directories." In addition, he predicts that "major seminars, conventions, and workshops will be devoted to the topic of information understanding"—a natural role for librarians.

With access to hundreds of bibliographic, directory, full-text, and numeric databases online, the fundamental problem of today isn't finding information, it is filtering and helping users make sense of all that we find.

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