TAKING CHARGE OF THE INFORMATION GLUT

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ABSTRACT: Information overload isn't new. The information explosion has lead to a superfluity of information -- databases, web sites, books, journals, listservs, faxes. Yet with all this information available many patrons complain they either can't find what the need or else they get thousands of 'hits.' The challenge of the Information Age has become turning information overload into knowledge. More information does not automatically lead to better information. Each year the problems appear to be geometrically increasing. Libraries are trying to move from quantity to quality of information provision. How to deal with data smog and technostress has been the topic of much research and publication. A variety of tools, technological and psychological, can help librarians guide and assist their patrons in dealing with the onslaught of information.

INTRODUCTION

Information was once a rare and cherished item. The few books in existed were guarded like rare treasures. Two years ago, during a visit to Austria, I had the privilege of visiting the library at the Abbey in Melk. The ceilings and walls are painted with beautiful paintings. There's gold gilt on all of the woodwork. The setting is one that encouraged the researcher to think about the things of rare and wonderful value that they were able to use there. The monks were the keepers of knowledge, even the oral history resided in the memories of the monks. Librarians continue that tradition.

Now books are plentiful and ordinary. Rutherford D. Rogers, the retired director of Yale University Libraries, in a now famous 1985 New York Times article observed the "Torrent of print strains the fabric of libraries . . . "we're drowning in information and starving for knowledge." (Campbell 1985). In less than 15 years, books have become just one, small source of information. Now a torrent of a multitude of information sources pours into our conscious and subconscious daily.

In 1970 Alvin Tofler defined "future shock" as the shattering stress and disorientation that we induce in individuals by subjecting them to too much change in too short a time. According to Berghel we are "In midst of a technological revolution that will dramatically set our century apart."

Computers were never really meant to help people. They were meant to process massive amounts of data, to break code and other things that while humans can do they are much slower at. The use of the computer as another "human" is relatively new.

More and more we are finding the great Information Age a little hard to cope with. The great mass of information available to us seems, at times, to be totally useless. Or is it becoming the case that information is now valuable because there is so much of it and like diamonds on a small subset are truly valuable. The role for the librarian in this age may well be to evaluate and grade the diamonds.

CONSEQUENCES OF INSTANT INFORMATION

If electronic tools are the great labor-saving tools of the 20th century why are they causing us some much trouble? Everywhere you go you find cell phones, pagers, bigger and better computers, small hand-held electronic datebooks, etc.

Electronic devices have become all intrusive. Our expectations are now that we can get answers to questions instantly. In Regis McKenna's book *Real Time* he talks about how Steve Jobs, with Internet access at home, finds it an invasion of his personal life – people expect immediate responses. As individuals we are no different. How many of us expect instant answers from our IAMSLIC colleagues who are in significantly different time zones? And what may be even worse, we get them! We have become a plugged-in society. And in the "paperless" society paper consumption per capita in the US tripled from 1940 to 1980 (From 200 to 600 pounds) and tripled again from 1980 to 1990 (To 1,800 pounds) (Shenk 1997)

The goal of industry seems to be to perpetuate the need for more and more information. It's working! In a study by Reuter's "Glued to the Screen: An Investigation into Information Addiction Worldwide," 1,000 managers said they felt compelled to gather more information than ever before just to keep up (Murray 1998).

Shenk in four years of research for his book gathered 23,967 electronic pages of text, conducted 481 NEXUS searches which resulted in downloading 46.2 megabytes (14,000 pages) and visited over 1,000 web sites. He concluded: Of what value is the "Wealth of lots of information if much of it is useless to the project and takes too long to make sense of?" (Shenk 1997)

We all feel this need gather more and more information. Shenk describes his research in gathering massive amounts of information. He finally comes to the realization that "When contexts begin to vanish in a sea of data, it becomes more difficult to remember any single piece of it. At a certain level of input the glut becomes a cloud of data smog that no longer adds to the quality of life, but instead begins to cultivate stress, confusion,

and even ignorance. " Somewhere along the line, the empowering eagle became an albatross." (Shenk 1997a)

In her article in *Training,* Rebecca Ganzel (1998) identifies ways in which high-tech is turning us into "stress-crazed wretches." They include:

1) An information glut. It is not the various types of technology that is overloading, it is just the mass of information that we can no longer process.

2) The frantic pace at which we are transmitting information -- overnight mail, e-mail, fax. I think that this is encouraging us not to plan. We wait until the last minute to convey information we need to others. Perhaps it's in hopes that we can gather that one more bit of information.

 3) Dehumanization. We are not machines. Machines are not people. But we are losing that distinction as machines invade our lives. We give machines human characteristics (burp, blink, etc.). We give ourselves machine characteristics (multitask, memory gaps, etc.). We're slower: we communicate at about 55 bits [less than 7 bytes] per second (McKenna 1997) Humans multitask easily: paint and hum, remember something at the same time. When computers multitask they do several things very quickly, but one at a time.

4) A physical toll that computers are taking on us. We are not physically suited to be part of a machine. Our posture, our eyesight and our joints and tendons suffer when we try to be repetitive machines. Many companies are now investing considerable amounts in ergonomic assessment of their employees. They realize that prevention is cheaper and wiser than treatment.

5) Imperfection. Technology can and will double-cross you. If you the count on the computer long enough, it will let you down. One program won't open a file in another. Try opening a WordPerfect 6.1 document when you're using 5.1. How often to computers simply not function when we need them? You want to impress a patron with an Internet search and the line is slower than slow. You turn your computer on, only to find that you have no power. And so it goes.

6) Anti-social activity. This is increasing as the numbers of and speed of communication is increasing and meaningful connections are decreasing. Sally Forth, a popular Canadian comic strip, recently had a series where the couple were out at dinner and observed another couple, who had ceased to talk to one another and were earnestly talking on cell phones. Taking our cell-phone, pagers and beepers everywhere disconnects us from where we are. We video tape our outlook on the world. Through all wonders of technology, we miss connecting with those most important – those we are with right now. A Carnegie Mellon study released in September discusses this "Internet Paradox" in

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depth (Kraut 1998). Use of the Internet was associated with declines in communication with family members, declines in the size of one's social circle and increases in depression and loneliness.

7) Job loss through technology – We downsize and continue to get more done. Even if the computer doesn't take your job it can cut into your home life. It's harder and harder to separate your home life. Most of our jobs wouldn't exist without computers.

8) Loss of control. The nerds rule again. For about twenty years personal computers restored some of the worker's autonomy (Rochlin 1997). Now with networks, intranets, firewalls, etc. we are back to specialists controlling our work tools and feel a loss of autonomy.

9) Fear of the unknown. Arthur Clarke wrote "Any sufficiently advanced technology is indistinguishable from magic." We've been afraid of magic since coming from the caves and before. We're just beginning to understand that it's not necessary to understand something in order to use it (Ganzel 1998).

10) The unfulfilled promise of technology. Fourteen years ago an Apple computer commercial told us that computers would change the world – that they would free us. (Johnson 1997). Yet most of us don't find life significantly different. We still do the same things, balance our checkbooks, write memos, etc. Only we now do them quicker and we have to figure out how to make the program work. The things delivered by the web tend to be rather mundane – tickets purchased, reviewing x-rays from a distance. What has transformed our culture is the sprawling network that lets millions of computers share information (Johnson 1997). It is the orders of magnitude of information. And the computer, like the car "continues to nurture the mythic dimensions of autonomy and personal freedom. But that freedom lives mostly in the world of advertising, where vehicles are pictured on mountaintops instead of in traffic jams. What is not advertised is the cost and demands of the network of roads, highways, and other elements needed to make the automobile useful. It is through the network and not the vehicle that the automobile has irreversibly transformed modern societies." (Rochlin 1997)

EFFECTS OF THE INFORMATION GLUT

The average individual encounters more information in one day than the average 17th century person did in a lifetime (Ganzel 1998). What of this information is useful to the individual? Probably not as much as we'd like to think. Irrelevant facts are insidious. Grossberger (1998) talks about the problem of all these trivial facts for the media person. What about for the librarians who have long prided ourselves as knowing?

A few years ago Dell Computers called 2,000 people and found 55% were "technophobic." In a similar Associated Press poll half the respondents said technology was leaving them behind (Ganzel 1998). A survey conducted by the Institute of the Future for Pitney Bowes showed that the average employee sends and receives 178 messages a day. 84% of these are people are interrupted six times per hour by messages with three of these being considered unnecessary (Wakin 1998). Stanford University's 1997 technostress class was an instant sellout.

What has happened to the glorious Internet that was to enhance communication between scientists and researchers? It now serves a dual role of public and private communication medium. Issues that are important to private individuals are often uninteresting and superfluous to the general public. You can see Linda's cats, Annemarie's menus for October, Steve's newly restored MGB, etc. This is changing the way we get to know one another. We run the risk of becoming isolated units in cyberspace. Public issues can be uninteresting to the individual. The latest debate over an obscure mathematical model sparks little interest in the average person. It's all out there for us to see and find when we're looking for something we think is important.

Some feelings about technology extend beyond anxiety to pathology (Ganzel 1998). There are Internet Addiction Disorder groups springing up, where else but on the Net!

Several authors have developed terms to describe the problem. Not many years ago it was information overload. As the problem grows, so do the terms. David Schenk in his recent book coined the phrase "data smog." This is described as a fog in the brain caused by an excess of bits of information. He found that it reduces attention span, disrupts family life, impairs your judgement. It crowds out quiet moments, obstructs contemplation, and stresses us out (Schenk 1997).

David Lewis, a British psychologist, calls it "information fatigue syndrome." It interferes with sleep and causes indigestion, heart problems and hypertension. In its mildest form, it sparks irritability and jeopardizes work productivity (Murray 1998).

What happens when our senses are overloaded and our brain in a fog? If forces people to resort to hyperbole and histrionics to get our attention (Schenk 1997a). Web sites become more glitzy, with sound and motion and blinking lights. Things bombard our senses even more. The problem grows.

Meeting the Professional Challenges of Information Overload In Cyberspace

While we want to lay the blame somewhere, we must remember that the Internet is credibility and value-neutral. One author referred to the Web as "multimedia mediocrity" because of the extreme variation in its sources and the lack of quality control. (Berghel 1997)

Search engines, once hoped to be a way to efficiently access the information on the Internet, now index more chaff than wheat. There are more than 140 search engines listed at Yahoo, including those that supposedly index everything to the very specialized ones – Aqueous (dedicated to sites that have water related content, but didn't have any hits on IAMSLIC), James Kirk Search engine, Next Crawler (Greek sites) Surfer's edge (Singapore sites). Now there are guides to search engines.

In June 1998 more than half of the top ten most-visited domains were Web search sites according to Media Metrix. (Lake 1998) However, one search site could provide 10 pure gold sites and another 100 pure manure. Why?

While there are major similarities in search engines in that they all 1) search an index of web sites or web pages. 2) use a search algorithm – this varies, 3) sort information – the proprietary algorithm for this is not shared by the companies (Lake 1998), no two search engines are exactly the same (Brueggeman 1997) And to make things harder, sites generally do not do a good job of explaining how they work and even if they do the average searcher sees the spot to enter the query and is off searching. A recent search for "IAMSLIC" yielded:

AltaVista	474
Excite Guide Search	0
GoTo.com	8
InfoSeek	175
Lycos Top 5%	0
Lycos	91
Magellan	1
PROFUSION	81
Thunderstone	1
Webcrawler	0
What U Seek	0
Yahoo	0

One of our biggest challenges is how to we find what we want in the vastness of cyberspace. This is not much different in theory than finding the right information in the vastness of the published word. The techniques for doing it may even evolve from our old "tried and true" techniques. We are creating gateway sites on our library web pages. These should serve as the old-fashioned pathfinders did as guides for our users. They are the sites (books) that we have sifted through to find the "best" places for our users to start their research.

For years we have cataloged books, indexed articles, and organized information. As librarians we look at metadata as a start to cataloging the multitudinous web sites. However, metadata relies on the persons putting the data out there to include the metadata, and many of them have never heard of metadata or don't understand it or see its value. We must become advocates of information organization and indexing. We must make it easy enough for the person developing the site to use it, or we will still find ourselves in the cataloging business.

We can lobby for controlling the number of public sites out there in cyberspace, a kind of "self-censorship of sites." We can encourage our patrons not to be so proud of their every web page, that they submit them everywhere. We can work to develop a standard for designers to use to exclude their less interesting pages from indexing.

Another way of helping ourselves and our patrons can be through environmental scanning. This has been a topic off and on for many years. It can be an outgrowth of the old Selective Dissemination of Information (SDI) programs. Only now the information is synthesized for the reader. This is not far removed from the "annual reviews" or "advances in" that we are familiar with, only it must be much more frequent. We see an example in the weekly fisheries report. There have been cultural problems with the acceptance of environmental scanning. Most of us believe that no one else can know our information needs and that we miss the serendipity of discovery if someone else is doing our reading for us. We as information specialists need to demonstrate the value of environmental scanning to our researchers' jobs easier.

One of the other big challenges for librarians/information specialists is to define our role. Will the structures of our jobs be altered? Will we develop new and different working relationships with our peers, vendors, and customers? The answer seems to me to be a firm maybe. Many of the answers to how our jobs will be defined in the future sound like our "old" jobs. The role of the librarian in the future will continue to be the authenticator of information quality (seems like collection development), the counselor and coach (seems like reference and instruction), the advocate of metadata and developer of ways to retrieve information (seems like cataloging), and the publisher liaison (seems like acquisitions).

Another challenge is knowing what our customers want and need to know and determining whether or not they are satisfied (McKenna 1997). We need to create organizations that constantly evaluate their success and adapts their services to correct for the failures. Librarians have surveyed patrons for years. Technology now gives us increased abilities to monitor the use and success/failures of our patrons, even those at a distance.

Another challenge is the use of appropriate technologies. There are so many modes of delivery of information now available that we must start teaching ourselves and our users

what is the most effective. Books still have their place. Often for facts and figures they are still the easiest place to find a quick answer. How many of us can tell where the particular bit of information we need in a certain book is by the dark, worn spot from it's having been open there so many times. Bookmarks of web sites provide the same information and could be made even more useful if we had counters on them to indicate how often we, or our patrons, had used them. But more than this we need to remember to suit the medium to the message. Voice mail can convey emotion that, despite smiley faces, cannot be conveyed in e-mail. Lots of facts and figures are still best conveyed in writing, not by voice. We are making decisions between standalone or networked CD-ROMs versus Internet access, print versus electronic. These decisions are only increasing. We need to continue and expand our studies of the effects of the medium on the message and the user.

Meeting the Personal Challenges of Information Overload In Cyberspace

Straighten out your attitude toward information (Wakin 1998), then on to the rest of the world. Or from a more profound philosopher "We have met the enemy and he is us." No matter how much we tell our patrons 'how to do it good' until we ourselves take control of our data smog we won't understand the problem or be heard with our solutions. We need to establish our information priorities (Lively 1996).

For those of us addicted to technology this will be difficult. We need to figure out what works best for us and to learn alternate techniques. Many of these techniques for managing incoming and outgoing information are old-fashioned organization techniques

Shenk suggests: 1) Turn off the TV, 2) Leave pager and cell phone behind, 3) Limit your e-mail and others – don't forward everything to every body, 4) Resist advertising, 5) Have your name removed from e-mail marketing lists, 5) Take cleansing "data fasts" or "data naps" – regular breaks away from information.

Tips from Rosen and Weil (1997) (include: 1) Sift and trash – focus on the info you really need, 2) set limits – ration time you spend with the media and computers, 3) Respond in your own time – turn off the fax ringer, disable the e-mail ding, 4)   Relax when technology makes you wait – don't get irritated while your e-mail boots or you're on hold, use that time to do small tasks or to rest, 5) Use technologies that work for you – you don't have to have every new technology with all the bells and whistles, 6) Schedule time away from information -- set aside slots for vacation, people, etc.

Other suggestions include:
- Choose the least feature-laden gadget – less to breakdown and how many times is it a feature that you really don't use anyway. Corollary: pick the right gadget for the right reason.
- Stop surfing for something to do – much like playing games
- Don't clutter listservs with "yes" and "me too" answers

We need to be the ones to control the future of information and not let information control us. We should be consciously choosing which technologies are good for us and which are not.

REFERENCES

Berghel, Hal. 1997. Cyberspace 2000: Dealing with information overload. *Communciations of the ACM* 40(2):19-24.

Brueggeman, Peter B. 1997. Full text web indexes. In: *Tradition & Innovation: Planning our Future. Proceedings of the 22nd Annual Conference of the International Association of Aquatic and Marine Science Libraries and Information Centers.* (eds. James W. Markham and Andrea L. Duda) pp. 123-128. IAMSLIC, Fort Pierce, FL.

Campbell, Colin. 1985. Torrent of print strains the fabric of libraries. *New York Times*, February 25: A10

Ganzel, Rebecca. 1998. Feeling Squeezed by technology? *Training* 35(4):62-70.

Grossberger, Lewis. 1998. Know thy stuff. *Media Week* 8(23):58.

Johnson, Steven A. 1997. *Interface Culture: How New Technology Transforms the Way We Create and Communicate.* New York: Harper Collins.

Kraut, Robert, et al. 1998. Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist* 53(9):1017-31.

Lake, Matt. 1998. Desperately seeking Susan OR Suzie NOT Sushi. *New York Times*. September 3.

Lively, Lynn. 1996. Managing Information Overload. *AMACOM*.

McKenna, Regis. 1997. *Real Time: Preparing for the Age of the Never Satisfied Customer.* Harvard Business School Press.

Murray, Bridget. 1998. Data smog: newest culprit in brain drain. *APA Monitor* 29(3). [Online.] Available: http://www.apa.org/monitor/mar98/smog.html [November 5, 1998].

Rochlin, Gene I. 1997. *Trapped in the Net.* Princeton, NJ: Princeton University Press.

Rosen, Larry and Weil, Michelle. 1997. *Technostress.* New York: John Wiley and Sons.

Shenk, David. 1997. *Data Smog: Surviving the Information Glut.* San Francisco: Harper Edge.

Shenk, David. 1997a. Data smog: surviving the information glut. *MIT's Technology Review* 100(4):18-26.

Tofler, Alvin. 1970. *Future Shock.* New York: Random House.

Wakin, Edward. 1998. Staying afloat in a sea of information. *Beyond Computing.* May, pp. 54-55.