

Internet Filters:
Library Access Issues in a Cyberspace World

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Introduction

It's an immense pleasure to have this opportunity to talk about Internet access issues, and to share with you what I've learned over the past three or so years through research and reflection. As with all things both human and technological, however, please keep in mind that these thoughts should be taken as no more than "work-in-progress", subject to the emergence of new problems, new challenges, and new insights with the Internet.

In the late 1990s, librarians around the world have become more and more aware of the mesmerizing possibilities for unfettered global access to local culture that converging communication technologies offer. At the same time, however, public concern about, and fear of, controversial ideas and images on the Internet have inspired both political and technological challenges to open access. Consequently, the Internet is also vulnerable to myriad possibilities for control of access to information--and in particular for unsurpassed centralization of control.

The political challenge, especially in the United States, China, and Australia, has been through legislative initiatives to criminalize certain Internet behaviour and activities. The most notable example in the United States was the Communications Decency Act, struck down by the United States Supreme Court in 1997; but there have been many subsequent clones of this legislation in the United States at both federal and state levels. [Subsequent to the IFLA conference, a group called Reporters Sans Frontières reported that 45 countries restrict Internet access in some way and that 20 control access totally or partially, censor Web sites, force users to register with state authorities, or take action against users (News Fronts International 1999).]

At the same time, many politicians--together with some parents, school administrators, corporate managers, government officials, and even librarians--have also turned to computer technology itself to suppress Internet-based content that they dislike and think everybody else also dislikes. The technological challenge to open access takes the form of filtering software products. In fact, over the past three or four years, a bewildering array of commercially available filters has appeared in the United States and Canadian marketplaces claiming to be able to either block or rate Internet-based content. Typical product claims are couched in the rhetoric of child protection and parental guidance or else in promoting corporate control over workers.

In Canada, pressures to censor Internet content are mounting. In at least one of Canada's ten largest cities, all of the public schools are using commercial filtering products on their computer workstations in the classrooms and the libraries. This may well be true of many other school systems across the country too, but a long tradition of paternalism and secrecy tends to inhibit public disclosure and accountability.

And in the last two years, controversies about open access in public libraries have been reported in several major Canadian cities (Vancouver, British Columbia; Calgary, Alberta; Burlington, Ontario;

and Toronto, Ontario). Public librarians in Vancouver, Burlington, and Toronto have gone so far as to solicit legal opinions about open access on the Internet.

Moreover, there is a parallel trend in both Canada and the United States to more and more labeling and rating of creative expression in every other communications medium. Rating and labeling started with motion pictures almost 100 years ago, and now is routinely applied to certain genres of popular music, particularly rap music, and to video games; there has even been pressure in the United States to rate rock concerts. Most American television shows carry ratings, and of course television programs and movies with any hint of controversy habitually carry advisory warnings; soon all TV sets manufactured in the United States will have the infamous V-chip to complete the technology of control. Some people have even floated the idea of putting ratings on books.

In light of these developments around the world; in view of the expanding belief among politicians and ordinary people that technology can successfully regulate Internet content; in view of the increasing acceptance of labeling of creative expression in just about every other medium of communication, it is timely indeed for librarians in all sectors to examine these issues and address the implications for information access on the Internet.

In the cyberspace universe of instant access to information and images of all kinds, how should librarians around the world respond to pressures for political and technological regulation? What is a reasonable balance between the conflicting goals of open access and community values? Between children's rights and parental responsibilities?

Do Internet filtering software products provide a solution? Are they useful tools for identifying and controlling creative content on the Internet? Do they help librarians, teachers, and parents? Will they protect children and teenagers from exposure to ideas and images claimed to be damaging?

Or are Internet filters merely the latest technologies for censoring certain ideas that are unpopular or controversial with the political elite? Do they result in viewpoint discrimination, in restricting and suppressing access to non-conforming expression?

The topic of Internet filters is an exciting and challenging one for librarians because it represents the intersection of our roles as advocates for intellectual freedom, as organizers of information, and as promoters of reading and media literacy. It gives us the opportunity to share our knowledge and expertise, and to increase our contribution to society at large and around the world.

This is especially relevant because, to date, public discourse has been fixated on the technology of access to the Internet. The common perception among both advocates and critics is that Internet regulation is a technological problem.

Filtering supporters and product owners, for example, respond to criticisms of software imperfections by countering that current limitations will be overcome "as the technology improves," and they are optimistic that technological solutions are "just around the corner."

Even critics who are opposed to these products on intellectual freedom grounds tend to resort to arguments about technological limitations. Some go so far as to say "scientific" limitations. The American Library Association, for example, declared in its 1997 "Statement on Library Use of Filtering Software":

“Library use of blocking/filtering software creates an implied contract with parents that their children will not be able to access material on the Internet that they do not wish their children to read or view. Libraries will be unable to fulfil this implied contract, due to the technological limitations of the software, thus exposing themselves to possible legal liability and litigation.” (American Library Association, 1997)

The fixation by politicians and the public on technology for quick and easy solutions is growing. This fixation creates an urgent need for a more theoretically grounded perspective that takes into account the relationship not just between technology and the regulation of information and ideas, but, more importantly, the relationship between technology and language, the very essence of human communication.

It is my view that such a perspective can be found in three bodies of theory and principles forming part of the foundational knowledge of LIS. These bodies of thought are: 1) intellectual freedom, 2) indexing and retrieval theory, and 3) reader response theory.

In essence, what these bodies of thought reveal is a whole set of intractable barriers that render perfect control over expressive content in any communications medium an impossible idea. These barriers arise from the unsolvable problems of ambiguity--ambiguity in language, ambiguity in indexing, and ambiguity in reading.

Intellectual Freedom

On the subject of library intellectual freedom, I can say little that has not already been said by others, both librarians and philosophers, with more eloquence. I only need reaffirm the urgency of stronger advocacy around the world for intellectual freedom, advocacy that is especially urgent in the library community.

I have recently been made aware that the library community appears quite invisible to human rights advocates. At a prominent international conference held in the fall of 1998 in Edmonton, Alberta (Canada), to celebrate the 50th anniversary of the United Nations passage of the Universal Declaration of Human Rights, not one speaker out of a score or more mentioned libraries or librarians (Schrader 1999b). Not one.

Many human rights workers do not make the connection. Indeed, some of them see libraries in a rather more negative light as serving the authoritarian interests of political and economic elites; they see libraries as part of the oppressive mechanisms of government and society that serve to reinforce the status quo and perpetuate prevailing power inequities.

So, although an esteemed speaker at this, the IFLA, conference, Asian Human Rights Commissioner Basil Fernando, declared earlier in the week in a plenary lecture that “libraries and liberties go hand in hand,” it seems clear to me that we have a long struggle ahead to escape from the shadows of human rights advocacy.

Libraries must come to be and be seen to be, at the very least, gently subversive, or they will remain hidden in those shadows. In the great tradition of the Universal Declaration of Human Rights,

librarians must take a stand for universal values, pledging to serve, first and foremost, democratic individual interest within the community of cultures. Above all, librarians must more actively oppose war in all its hideous manifestations, for intellectual freedom and libraries are the first casualties of war. In these and many other ways, we should attempt to strengthen our links to human rights issues. In this regard, the creation of FAIFE, the IFLA Committee on Free Access to Information and Freedom of Expression, is an admirable and noteworthy achievement, and the adoption earlier this year of a new "Statement on Libraries and Intellectual Freedom" is even more admirable and noteworthy--indeed, I think, a daring achievement (International Federation of Library Associations and Institutions 1999). In the year 2000, the International Year for a Culture of Peace, librarians have an opportunity to raise their profile further in promoting awareness of human security and peace issues.

So, although there is an evolving tradition of intellectual freedom that we could draw on to evaluate Internet filters, the approach I am taking here is more pragmatic, more focussed on the performance of the products themselves in judging their claims to be able to control access to controversial and objectionable information and images. For this focus, I will draw primarily on indexing theory, but also on reader response theory.

I hope that this analysis will help librarians to judge the marketing and advertising claims of these products against the reality of just how effective they really are in regulating and censoring Internet content.

This topic has relevance, by the way, far beyond librarians, teachers, parents, and typical library settings, because many products are being marketed to corporations and government departments and even entire governments. And in these settings, the products are being installed as merely routine bureaucratic procedures, without debate--and, indeed, without employees even being aware of their installation.

Internet Filtering and Rating Software

A year ago, in mid-1998, there were about 40 products on the market in the United States alone. Now there are more than 80! The more popular have been CyberPatrol, CyberSitter, NetNanny, SafeSurf/LibrarySafe, and SurfWatch.

CyberPatrol, which has partnerships with Microsoft, Netscape, America Online, CompuServe, and Prodigy, among other corporations, claims to dominate the vast majority of the worldwide filtering market. Other products are Bess/N2H2, CyberSnoop, I-Gear, Internet Filter, Library Channel, NetShepherd, On Guard, Parental Discretion, Rated-PG, SmartFilter, Tattle-Tale, WebSense, and X-Stop. NetShepherd's Family Search is the first product to incorporate both filtering and content rating.

In the U.S., a recent coalition of Internet industry corporations and public interest organizations has created a Web resource for parents called GetNetWise that includes details about these and many other commercial software programs (GetNetWise 1999).

Filtering software products are designed to perform at one or more levels of computer configuration, ranging from the individual computer workstation or local area network, to a remote vendor server,

an Internet Service Provider (ISP), and other arrangements.

These products offer five basic approaches to controlling and suppressing expressive content on the Internet:

- "bad word", "bad phrase", and even "bad syllable" stoplists, all of which function like keyword searching in full text environments, and require that every conceivable synonym and euphemism be identified in painstaking detail and recorded by the software manufacturer, or in some cases the customer--term, proximity, and boolean search are the three common modes for identifying a targeted expression
- "bad site" lists, identified through keyword stoplists, which block at the domain or host level, directory level, file level, or the IP (Internet Protocol) address--the different products block an enormous range of sites, from as few as 15,000 up to 138,000
- "bad topic" lists, which organize objectionable sites into broad subject categories created by the product owner--here also, an enormous range in subject categories is provided by the different product manufacturers, from just three categories up to 28 or more, and some products assign an undesirable site to multiple categories--typically, these product categories reach far beyond sex and violence--as one observer, American librarian Karen Schneider, author of *A Practical Guide to Internet Filters* (Schneider 1997b), the most comprehensive research to date into filtering products collected through "The Internet Filter Assessment Project" (Schneider 1998), has written, the subject categories "read like a laundry list of human concerns, with some venal sins thrown in"--one product, CyberPatrol, for example, has 12 categories of censored topics: four categories for sex, nudity, and violence; one for "gross depictions"; another for "intolerance"; and another is for sex education--you can see the ideological framework here as well as the extreme subjectivity at work in the creation and application of these subject groupings
- site content rating systems, which use the technology of PICS (Platform for Internet Content Selection) to block access to all unrated sites and/or to those that carry particular ratings--ratings are assigned either voluntarily by site owners on the basis of a self-administered ratings questionnaire or by third party reviewers, human or robot; some rating systems are based on age and others on a mix of age levels and subject content categories (the rating product NetShepherd claims to have rated 1.5 million URLs in a mere six months!)

and,

- "bad service" lists, which block access to services such as telnet, FTP, games, Internet chat (IRC), and newsgroups.

It is important to understand that, in order to achieve their goals, the producers of these software products rely almost exclusively on automation, not on human eyes and brains--and certainly not on trained cataloguers! This is why some critics have characterized software filtering action as computer-generated censorship.

Software robots, either existing or customized mechanical search engines referred to as Web spiders,

are used to search for and identify unacceptable Internet content. Some products, though not all, supplement with a small number of staff to review sites; but obviously they can only review a very small proportion of sites identified by the software robots.

An alternative approach offered by one or two products is a programming "shell" that customers use to create their own stoplist entirely; in these products there is no pre-loaded list of prohibited words, phrases, sites, or categories. (NetNanny and SurfWatch allow stoplists and site-by-site blocking.)

Since, however, in the case of the majority of products, the process of identifying objectionable content on the Internet is almost entirely automated, the current language that is being used to describe their Internet content search functions--searching, researching, browsing, surfing, navigating, visiting, creating, analyzing, reviewing--should really be regarded as essentially metaphorical. These are all human cognitive activities.

A more precise representation of Internet filtering would describe it as an automated process consisting of a computerized scoring algorithm based on pattern or string recognition--exact-match character recognition, to be even more precise. CyberPatrol, for example, describes its robot searching process for identifying objectionable content on the Internet thus:

Cyber Spyder visits the sites and creates a report including 25 characters before and 25 characters after each occurrence of the keywords used in a particular search. The researchers [*sic*] start by reviewing this report. If necessary, the sites are visited and viewed by a human being before being added to the CyberNOT list. If not necessary, the sites are not viewed or added. For example, if the context of the word "breast" was the proper way to prepare chicken, that is a good indication that the site doesn't meet the CyberNOT criteria (Censorware Project 1997).

Nonetheless, in spite of the virtually exclusive reliance on computer-generated targeting, another product misleadingly describes its software as "context sensitive" phrase filtering, and claims that it is "90 percent effective without even knowing where the objectionable material is"!

To bring home how metaphorical this terminology is, try to reverse the image: that is, try to talk about reference librarians searching the Internet as "search engines". Clearly, this talk is foreign to our understanding of the human searcher. The searching functions that Internet software filters perform are not at all synonymous with what librarians do--not even when librarians engage in censorship!

So even though some of these filtering and rating products utilize very sophisticated search engines, what they offer is not Library of Congress cataloguing or Dewey or UDC (Universal Decimal Classification), and it's certainly not Colon or Bliss. Actually, it's much more like automated or electronic translation. Context sensitivity in machines, whether for searching, filtering, or translation, is light years away.

In spite of the wide divergence among filtering products, they share many common characteristics:

First, none can block graphics-only Web sites, only text-based.

Second, none voluntarily tells site owners that a site has been blocked or rated. It is only by accident that an owner--or searcher--would discover that a given site had been targeted. Moreover, there appears to be little recourse legally, and even less in persuading product owners to change their minds. [Subsequent to the IFLA conference, a colleague and prominent writer and library consultant, GraceAnne DeCandido, has written of her personal experience in a "PLA Tech Note" on the subject of filtering (Public Library Association 1999): "I take the issue of filtering very personally. I have been a library consultant for about three years now. In the summer of 1999, I was told that my own Web site, which has crucial documents related to my business and my work, was blocked by CyberPatrol. I don't know why...."]

Third, the majority of products refuse to permit their customers to view their pre-programmed stoplists of words, phrases, sites, and topics deemed objectionable. Indeed, product owners regard their stoplists as highly valuable commercial trade secrets, and very few products permit customers to disable the stoplist. Curiously, a few of the most secretive product owners permit customers to view their regular stoplist updates.

The question of how all of this secrecy protects parents and other consumers must be considered: Why would disclosure of ingredients on food products, a well-established consumer practice, be more important than disclosure on a "mind product"? One wonders whether parents would buy an unlabelled can of soup or tin of baby food.

Fourth, all of them cost money--forever! All are commercial products, and pricing policies vary widely, with United States prices in 1998 starting at \$25 for one workstation and \$10 per LAN workstation for initial installation, and annual update fees from \$30 for one workstation up to \$1,500 for 100 workstations and \$4,000 for 250.

Fifth, none of the products is created through the expertise of credentialed librarians and indexers. Instead, a few products employ a small number of "Internet and computer-savvy" young people for minimum wage, to locate questionable sites. Perhaps the absence of librarians in these businesses explains in part why so few of them have any library customers (many have no library customers in the US, others a mere 50 to 100).

Other products rely on volunteers. NetShepherd, for example, had by 1998 developed its own third-party "rating community" of 1,500 people who "review and democratically rate" Internet content. Nothing is disclosed, however, about the educational qualifications of this community, how they are selected, who selects them, what they are paid, what sort of quality control over their work is in place, or what sort of indexing consistency testing is done to ensure accuracy in the resulting product.

Finally, product owners and their supporters exaggerate the effectiveness of the products, and underestimate the enormous complexity of the task they claim to perform. I charge exaggeration because of 1) the dynamics of the Internet, and 2) the dynamics of human language in indexing itself.

Indeed, the magnitude of the task that the producers of filtering and rating software have undertaken is formidable. One estimate of the number of new sites in 1998 in the United States alone was 3,000 per day! And those are English-language sites only. The Internet is a dynamic phenomenon that leaves product owners shooting at moving targets--speeding targets, actually. A 1998 estimate

of the size of the Web was 320 million Web pages currently accessible to casual browsers, a number expected to grow by 1,000% in the next few years.

Indexing and Retrieval Theory

Indexing and retrieval theory is directly relevant to the evaluation of filtering software products. Human language is by its very nature ambiguous, nuanced, imprecise, inconsistent, constantly changing, and culture-specific. It follows, then, that indexing operations to describe and represent human language texts are at least as ambiguous, as fluid, as susceptible to nuance, as imprecise, as inconsistent, as subject to cultural variation, and as susceptible to change over time. After all, indexing operations are bounded by language itself.

So, even though the purpose of Internet filtering software is to be able to control and prohibit access to information and images rather than to facilitate their access, the intellectual operations involved in identifying and describing expressive content for targeting are similar to those employed in conventional retrieval systems--as are the problems and challenges.

The goal of indexing in conventional retrieval systems is to provide a systematic guide to the contents of information records. More generally, the goal is to name information, to gather together ideas into categories so that a searcher can identify everything on a subject.

In order to do this, the indexer must decide first what concept or characteristic is to be represented, then what name to give the concept or characteristic, and finally how to organize the designated names (descriptors) into a searchable database.

The intellectual operations involved in representing subjects in an indexing system pose immediate problems for effective identification, control, and retrieval of information.

The problems concerned are the indexing concepts of: aboutness, specificity, consistency, exhaustivity, relevance, and universality.

Aboutness is the central problem of indexing: how does one decide what a text is about? How does one determine context? Aboutness is highlighted by one of the very special features in indexing operations and retrieval systems: materials both for and against a subject are regarded as being "about" the same topic, and are therefore normally gathered together under the same classification number and under the same index term. Additional linguistic devices connect and control related terminology to maintain consistency and avoid redundancy, hence one element in the concept of authority control.

So, for example, in order to provide access to the literature on abortion as an ethical issue, both abortion-choice and anti-abortion materials are classified under the same number in the *Dewey Decimal Classification* (179.76 Abortion under 179.7 Respect and disrespect for human life), and in the *Library of Congress Subject Headings*, under the generic "Abortion--Moral and ethical aspects." Even an index term such as "Pro-life movement" will encompass oppositional critiques of that movement.

The impact of this special feature of indexing was dramatically illustrated in the 1998 announcement

by CyberPatrol of its decision to block the American Family Association's Web site because of its intolerant opposition to homosexuality. So, not only does this product try to censor positive presentations of gay and lesbian life, it also censors ones that are highly critical.

Specificity is the opposite problem of aboutness: how does one decide the essence of a text, and which term or terms represent the essence of a text?

Consistency is also involved in the problem of indexing specificity, because synonymous terminology must be identified and controlled--and hence the need, in part, for authority control.

Exhaustivity involves the question of how many concepts from a document will be represented.

Relevance is related to exhaustivity in posing the challenge of identifying and indexing only those aspects that people want information about.

And finally, the assumption of *universality* challenges all indexing operations. The danger of this assumption is especially relevant in an international context such as IFLA. Universality is the pervasive--and mistaken--belief that there is a one-to-one correspondence, an absolute link, between a concept and descriptor that transcends not only culture, ideology, and time, but age and reading differences as well. Universality assumes the existence of one and only one cultural perspective--and generally it is the indexer's. In other words, universality ignores the reality that indexing is an act of social construction.

With Internet stoplists of words, phrases, syllables, and sites, the filtering software problems of identifying and blocking concepts are similar to those encountered in free text searching in conventional retrieval systems. Free text searching works on the assumption that what a text is about can be succinctly and effectively represented by individual words in the text--that is, by a discrete strings of characters that match exactly the searcher's mental picture. The problems resulting from exact-match character recognition are ubiquitous as well as profound--in both conventional search and filter environments.

The difficulty is that free text searching does not permit a trained human intermediary to impose an intellectual structure on text for effective retrieval. Instead, this kind of searching is free of context. It is word-focussed, not concept-focussed. It is, to emphasize again, very similar to automated translation.

Filtering products respond to offending text in different ways. In one type of blocking program, for example, an offending word or phrase is replaced by a string of "x's" or by a blank space. The result of such literalness is to make gibberish of text. Karen Schneider documented an instance of this in a search she undertook to verify the OCLC record for *Our Tribe: Queer Folks, God, Jesus, and the Bible*, published in 1995 by Nancy Wilson (Schneider 1997a). With the filtering product in operation, the entry appeared as:

245 Our tribe : \$b folks, God, Jesus, and the Bible /
 \$c Nancy Wilson.

And the main subject heading "Homosexuality" was omitted from the 650 fields:

650 \$x Religious aspects \$x Christianity.
 650 \$x Biblical teaching.

Similarly, a title on human sexuality, *Living in Sin? A Bishop Rethinks Human Sexuality*, published in 1998 by the well-known Bishop John Shelby Spong appeared as:

245 Living in sin? : \$b a bishop rethinks human /
 \$c John Shelby Spong.

And yet the 650 field was:

650 Sex \$x Religious aspects \$x Christianity.

The most egregious type of blocking option makes the offending words, sites, and topics simply disappear. It makes them utterly invisible to searchers, leading to the conclusion that no information even exists on the topic of interest. The only way one would discover this would be to search for already known items, sites, or topics. For example, in Yahoo!'s "Society and Culture" category there is a heading for sexuality, but that topic simply does not exist with some filtering products--it's just invisible. An example of the mentality underlying this approach is CyberSitter's own product comparison page, which states that "secrecy is best":

CYBERSitter displays no tell-tale signs that it is installed. Other products display their logos prominently when a site is blocked. They also display icons in the task bar or show up in the task manager that lets computer savvy kids know is is [sic] running. CYBERSitter does none of these things. We believe that secrecy is the best security. (CYBERSitter 1999)

Thousands if not millions of inappropriately blocked sites have been documented in product evaluations by filtering critics. Perhaps the most frequently blocked are any that remotely concern sex. The most well known example was the blocking three or four years ago of just the one word "breast" that resulted in the blocking of all breast cancer sites. One product blocking on "sex" is also reported to have blocked the news group dedicated to Star Trek's Captain Jean-Luc Picard, alt.sexy.bald.captain. And the NASA Mars exploration site marsexplorer. And some two years ago, in its relentless search for dirty words, one product added the word "couple" to its stoplist, with the result that the White House site was blocked because "couple" appeared in a reference to the Clintons and the Gores. This product also blocked the site for Super Bowl XXXI, and a hockey site because of news that a player had been sidelined due to a groin injury.

Many products also block any reference to homosexuality, lesbianism, or bisexuality. As a spokesperson stated: "We filter anything that has to do with sex. Sexual orientation is about sex by virtue of the fact that it has sex in the name." Using this approach, one product prevented access to the entire library Web site of the Archie R. Dykes Medical Library! Why? Because of the term "dyke", a North American slang term for lesbian.

But most products do not focus exclusively on sex and violence, however. Many have strong political and ideological motivations. Some block all feminist sites, such as NOW, the National Organization for Women, feminist newsgroups, and sites such as alt.feminism. Also blocked was

the Planned Parenthood site.

One product blocked the important Holocaust archive and anti-revisionist resource site *Nizkor* for a time because it was claimed to contain "hate speech".

In the Canadian city I alluded to earlier, where all the schools use filtering products, the following topics can not be searched on the Internet for school assignments:

- | | |
|--|----------------------------------|
| - suicide prevention | - prostitution |
| - violence in the media | - first aid |
| - controversy over tobacco & alcohol advertising | - Pan Am Games |
| - drug abuse | - gay youth |
| - gender issues | - sexual harassment |
| - stereotyping | - eating disorders |
| - child neglect | - death |
| - rape | - pain |
| - race relations | - animal rights |
| - fetal alcohol syndrome | - depression |
| - Martian chronicles | - sexually transmitted diseases. |

Basically, the list includes just about everything that a typical North American teenager is interested in!

There is a long tradition of research in library and information studies that shows even the best indexing is imperfect. Consistency among indexers in assigning index terms is a well-known problem. Inter-indexer consistency studies show over and over again that there is a great deal of variation in levels of agreement on the assignment of terms representing the subject content of a text. Consistency among indexers ranges from a minimal 4% to just over 80%. Greater levels of consistency are achieved when indexers choose terms from a controlled vocabulary, with consistency scores then ranging from 34% but with the same ceiling.

In light of these well-known studies, why would filtering products--with their electronic robot searching software--achieve the much higher rates of indexing consistency, exhaustivity, specificity, and certainty that their advertising rhetoric claims?

The simple answer is that they don't! Research shows that not only do Internet filters fail to block as promised, but they also block thousands of sites that have no "objectionable" content whatsoever--even by the most conservative standards. The Censorware Project has documented a large number of sites unjustifiably blocked by CyberPatrol.

What accounts for the serious deficiencies in the performance of these products? Why such low rates of indexing consistency, exhaustivity, specificity, and certainty?

The answers are found in the essential ambiguities of human language itself, and in the challenges that human language presents for both free text searching and subject identification.

Every language has a multitude of synonyms and antonyms and euphemisms, puns and double entendres. And in English there are many slippery terms like "objectionable", "patently offensive",

"degrading", "harmful", "morally dangerous", and "pornographic". These terms mean many different things to different people. There are also a number of equally vague legal concepts used in Canada and the United States--"obscenity", "community standards", "indecent", and "harmful to minors"--that do not have self-evident definitions upon which everybody agrees.

We have words with multiple meanings, homographs or homonyms, such as "queen" and "couple". Many homonyms with a sexual meaning also have at least one meaning that is non-sexual in nature, such as "gay", "wiener", "cock", "monkey", "safe", "crab", "pussy", "pansy", and "fairy".

We also witness new terms invented every day, many the latest slang to communicate sexual innuendo. Examples abound: "rock and roll" used to be African-American slang for sexual intercourse; "fuddle-duddle" was bequeathed to the Canadian public by former Prime Minister Pierre Elliot Trudeau; "Bobbitt" came from the United States, and more recently, terms for the scandal that threatened to engulf United States President Bill Clinton--"Sexgate", "Tailgate", "Zippergate", and "Fornigate". "The full Monty", British slang for frontal nudity, was recently introduced to North American popular culture through the hit movie of the same name. [Lexicographer John Ayto has recently identified the emergence of 5,000 key new words in the English language over the last century, many of which relate to sex (*The Nation* 1999).]

We see older terms twisted into new meanings, such as "queer", slang in North America for homosexual, which has been reclaimed by members of the marginalized gay and lesbian community. And we witness terms going out of fashion, such as the slang use of "French letter" for "condom", "hooch" for alcohol, and "cats" for men.

In Chinese text, homographs are also extremely frequent when Chinese is Romanized in monosyllabic form without tone marks (Arsenault 1998).

Categorizing information involves inherent category problems. Concepts do not fit into simple compartments. As Trinh T. Minh-Ha has written, "Despite our desperate, eternal attempt to separate, contain, and mend, categories always leak" (Trinh 1989).

All of the problems of indexing for blocking objectionable content surface with three subjects commonly targeted by North American Internet software products: sex, violence, and hate. These subjects represent very broad categories with enormously variant terminology and cultural attitudes.

But beyond such variation are even more profound problems for indexing and filtering these subjects. For blocking technologies, the problems of identifying portrayals of sex are directly opposite to those encountered in identifying representations of hatred. The presentation of sex that offends is explicitness: the very words and images evoke eroticism, and more. The challenge is that there are hundreds of terms for conveying the explicit, and more being invented every day in every language. In North American English usage, there is even terminology to distinguish degrees of sexual explicitness: "erotica" and "pornography", "softcore" and "hardcore"--one might refer to the literary, the other most certainly to trash.

In contrast to the literalness of sex, hateful language, whether it be the language of misogyny, racism, religious prejudice, xenophobia, or homophobia, is frequently "coded". Most bigots know enough to couch their hatred in analogy and metaphor and in neutral or positive terms such as "equality". Overt terminology is carefully avoided in favour of the appropriation of descriptive

categories such as “special rights”, “welfare moms”, “equal opportunity”, “multiculturalism”, “political correctness”, “family values”, and “community standards”. Moreover, will judgments be made that distinguish “strong dislike” from “hatred”? Or “justified” hatred from “unjustified” hatred? And what will we do in the many situations where it is our most influential politicians who are the hatemongers?

The language of violence is equally problematic for indexing and filtering, but here, the element of context is probably more critical than for identifying the explicitness of sex or the muted codings of hate. If the only criterion is violence, it is conceptually but a short distance from war to genocide, from self-defense to murder, from the crucifixion of Christ to American slavery, from *Home Alone 2* to *Exit to Eden*, from torture to spanking.

These dichotomies serve to underscore the imperative of context in judging depictions of violence. Is all violence of the same kind? Is all violence degrading? Is cutting off a finger the same as capital punishment by electrocution? Is *Schindler's List* in the same category as *Terminator II*?

To sum up the lessons of indexing theory for Internet filtering and rating systems, these products represent, in my view, a worst case scenario in the organization of information. When blocking and rating decisions are made by unknown third parties with unknown qualifications and unknown ideological agendas, the danger to public debate is clear. With a broad sweep, these products indict all representations of violence, sex, hatred, and other targets as equally bad, and as especially bad for young people.

Walt Crawford and Michael Gorman (1995) recently argued that there may very well be no universal solution to the problem of effectively searching massive full-text databases being treated as a single searchable entity. They dismiss the notion of relevant electronic searching by knowledge robots, "knowbots", through increasing masses of data and information:

How can a computer program judge relevance in a meaningful, useful way? Given a reasonable breadth of interest, how can the knowbot be stopped from drowning the user in material (relevant and irrelevant)? (p. 74)

Exactly the same questions are germane to filtering: How can a computer program be stopped from overbreadth, from suppressing millions of items irrelevant to the intended subject, from drowning *out* the user?

In filtering product operations, texts are dissected into selected parts on the basis of a pre-determined corporate value system, and the offending parts are then restricted or prohibited. Integrity of the text and respect for the reader are ignored in favour of a single, uniform standard of "safe" words and "safe" ideas. When context is sacrificed in this way, one four-letter word becomes more important than 400 pages of story. The great Canadian novelist Margaret Laurence, in what seems now like another era, called this "snippet" censorship, the practice of basing one's judgment of a work on offending words or phrases and on scenes lifted out of context.

Trying to "censorproof" the Internet--trying to sanitize it and make it safe from controversy and complaint through the adoption of filtering or rating software--is, in my opinion, doomed to failure. The many reasons I have already touched on are summarized here:

- new sites--there are an estimated 3,000 new sites per day in the United States alone, and new additions to already reviewed sites
- new terms--especially slang for sex and genitalia
- new issues--new subjects; old subjects
- region or culture-specific terms, even among all English speaking peoples, for example, "randy" from England, "roger" from Australia, and "shag" from the U.S. movie "The Spy Who Shagged Me" (Jamieson 1999)--not to mention foreign language words adopted into English, often with different meanings than in the source language
- variable interpretations
- variable perceptions of offensiveness, indecency, harmfulness, and so forth
- variable perceptions of age appropriateness
- imprecise and variable descriptor terms because of the dynamics of language--synonyms, puns, homonyms, multiple layers of meanings, inherent category problems
- sites in languages other than English
- culture-specific values and priorities, for example, compare American and European attitudes to violence, sex, and nudity.

As DeCandido (1999) observed recently, new technology has always been seen as threatening, with sex in the mix and social collapse lurking just around the corner. She said, "We may be inventing the present, but the questions have been raised before", and went on to urge:

Let us not silence the voices who cannot seem to talk about anything but pornography on the Internet, but let us fill the air with our voices, because we have more powerful things to say" (p. 44).

Reader Response Theory

The problem of ambiguity in language is also highlighted by reader response theory, which suggests that the response of a reader to any text is a confluence of the text itself, the reader's personal history, the reader's reading history, and the reader's motivation for reading.

Hence, rather than being fixed and objective things, texts are essentially ambiguous and fluid. Reader response theory is captured in a familiar expression: It's in the eye of the beholder.

We only have to think of television shows and movies and books to see this truism in full action. No matter how popular or unpopular something is with the majority, there is always somebody on the other end of the spectrum of public opinion.

Reader response theory is especially relevant in considering text for children, taking into account their enormous variation in emotional development and psychological maturity--not only at different stages of growth, but at the same age as well. Moreover, research shows that the same young person may read widely across a range of reading difficulty in fiction.

Maturity is not a simple function of biological age: one 12-year-old may be nearly an adult, another is closer to childhood. While the average age of puberty is around 10 or 11, with wide variation

ranging from seven to 17, some adults are horrified that texts geared to these ages deal with menstruation and pubescent sexuality. Those same adults tend to be even more horrified that some parents talk to their children as young as three years of age about their bodies and about what is appropriate touching and what is not.

To accommodate the vast diversity of needs represented across such broad age groupings means that each young person must seek out their own level of reading, viewing, and listening interests, both individually and continuously, under the guidance of their parents or guardians. Moreover, most young people who are readers tend to "read up", that is to say, they read above the reading level designations assigned by publishers, reviewers, and librarians.

Internet content is no different. Filtering and rating decisions that treat it as if it is fixed for all children regardless of age and maturity, is an inadequate and flawed approach to child development.

The qualities needed for sanitizing a collection of materials in order to avoid complaints, whether it be the Internet or the library, are twofold:

- clairvoyance, the ability to read people's minds, and
- prophecy, the ability to see into the future to anticipate emerging areas of controversy that need to be avoided now to prevent grief later on.

Reflections and Summation

In conclusion, what the principles of indexing and reader response tell us is that Internet filtering and rating technologies are theoretically unworkable. It is not that they are technologically unworkable, or technologically limited at the present time.

Rather, it is the essential ambiguities and dynamics of language, text, reader, indexing, and retrieval that ensure the ultimate failure of automated searching.

All of these ambiguities and dynamics prevent filtering and rating software from ever being successful in controlling the world of ideas at a level of consistency, exhaustivity, specificity, and certainty that would be sophisticated enough to satisfy critics, reassure parents, and relieve librarians and teachers of unpleasant encounters with complainants. Human language is just too unstable, words and meanings just too elastic.

As one critic has put it, "safe-only access can not happen because individual perceptions of safe are as varied as the number of sites on the Internet".

In response to criticisms of software imperfection, apologists are quick to argue that current technology is "good though not perfect", that "some protection is better than none," that "80% is better than nothing".

We need to ask if smoke detectors in our homes and offices that worked 80% of the time would indeed be better than nothing--especially when the timing of the 80% operational phase is unknown and unknowable.

Moreover, to extend the analogy, we might ask how acceptable such smoke detectors would be if they not only reacted to smoke but also to incense, garlic, sweat, perfume, or other unpredicted and unpredictable triggers.

Yet the very names of the software products--nanny, patrol, shepherd, sitter, watch--conjure up images of unqualified 24 hour-a-day protection, safety, guidance, and reassurance. NetNanny advertising, for example, says: "NetNanny is watching when parents aren't." However, if you read the fine print with the purchase of this and other filtering products, you will discover that the legal liability claims are much different, far more constrained.

But instead of fulfilling their advertising promises, what the new products offer is the illusion of success--an illusion that comes with a high price tag. One price is a false sense of security. Its twin is a false sense of confidence that all appropriate information will still be retrieved when one searches the Internet.

Another price is intellectual freedom. Since indexing for any retrieval system is about the control of ideas as much as it is about access, the dangers to intellectual freedom and media literacy are always imminent. The crude, paternalistic strategies adopted by filtering and rating products should serve to remind us that subject authority control keeps some voices out just as easily as it lets others in.

There is yet another cost. Filtering products do not help young people learn how to assume responsibility for adulthood. They do not help them learn how to make independent critical judgments, how to say "no" to unwanted sexual advances, how to live vicariously through story rather than dangerously through experience. Internet filtering as a solution to offensive ideas in cyberspace is like performing brain surgery with a chainsaw or a jackhammer.

There is an even more disturbing aspect of the software phenomenon: some manufacturers of Internet filtering software are using their products to silence criticism of them, and to suppress public debate about the usefulness and effectiveness of these very products.

In retaliation for criticism on the Internet, CyberSitter's "bad words list" was revised last year to block access to sites containing the phrase "Don't Buy CyberSitter!" The same product has also blocked the site for Peacefire, a student organization opposing Internet censorship, and the site for *The Ethical Spectacle*, a Webzine that has criticized the company that owns the product.

CyberPatrol has similarly gone to extreme lengths to suppress criticism, blocking any site that opposes it. An example two years ago was the blocking of Web pages pertaining to the 1996 monograph entitled *Sex, Laws, and Cyberspace* by Jonathan Wallace and Mark Mangan. It has also blocked the Electronic Frontier Foundation archive.

Internet filters are an illusion. They impose a simplistic set of values on a complex and highly variable world of personal tastes, individualized family values, highly variable perceptions of age appropriateness, and widely varying thresholds of social tolerance.

The products take judgment, control, and accountability away from library professionals in favour of third-party commercial interests with hidden ideological agendas relying on faceless robots for exact character matching. Automatic searching for objectionable content has no more chance of attaining an acceptable degree of success than automatic translation has.

As one critic has asked: Do parents really want to turn their children's value systems over to a software vendor? And Karen Schneider has called these products "mechanical tools wrapped around subjective judgment."

Only parents can judge when a young person is mature enough to access the Internet, whether at home, at a library, or at school--just as it is parents who must determine age appropriateness for their children to access ideas and images in any other communications medium. This is no different from parental judgment about when a young person is mature enough to take the bus to school alone, to go downtown or to a shopping mall alone or with friends, to cross the street alone, or to engage in all of the other thousands of behaviours that mark growing up in modern societies.

We need to give serious thought to the question: Would you trust your unknown neighbours living ten streets away to decide what information you and your children will be allowed to see on the Internet? What about your level of trust in people living in a totally different country with a totally different balance of cultural values and priorities? The chance of this happening with filtering technology is nearly 100% for everyone outside the United States. Yet most people would not permit others--fellow citizens or not--to view and edit their morning newspaper before they received it.

In a more rational world, we would seek major (public) investment in the classification of world-wide digital resources by experts in library and information studies--not amateur entrepreneurs making money by exploiting public fear and lack of knowledge. In that other world, we would also make a major commitment to electronic collection development by peer experts as we have done with resources in other media.

Equally in that other, more rational, world, I believe that it might also be possible for librarians as an international profession to seize the initiative to classify sexually explicit Web sites from all other sites, as the print and video worlds are divided at present between library collections adult bookstore collections--albeit recognizing that it is an uneasy truce with a contested grey area that waxes and wanes as public morality changes over the decades and across countries and cultures.

I would like to see librarians in all sectors of service to society enter into the public debate about the Internet through their institutions and associations, as well as individually by virtue of professional training. I would like to see them help refocus public debate around fundamental social policy objectives and the strategies to achieve them. I would like to see librarians work to dispel fear and moral panic about the Internet and kids, and instead to help to promote critical thinking and understanding.

I would also like to see librarians caution parents, teachers, school administrators, the media--and politicians!--about the serious shortcomings of Internet software products, shortcomings that are not merely technological but, more importantly, moral and pedagogical.

Librarians are beginning to take these kinds of initiatives. The American and Canadian Library Associations have developed position statements on Internet access in libraries, and librarians are challenging knee-jerk media sensationalism. They are also exploring ways of organizing the universe of cyber-information. Most librarians now have written policies and procedures for collection management and reconsideration, and many have added Internet use policies. Internet

site collections are being developed on a non-commercial basis. At the same time, librarians are becoming more aware of legal standards of due diligence with Internet access. Many are entering into fuller discussion and dialogue with parents, young people, the general public, the media, and politicians.

Along these lines, broadly based consortia of interested associations and agencies have recently formed to address Internet access issues. I have already mentioned GetNetWise in the United States. In Canada, the Media Awareness Network provides educational approaches to emerging Internet-related issues for the benefit of children and young people. It was founded in 1995 as a clearinghouse on media education and media violence, and went online with its Web site a year later. The Network is a partnership of associations and institutions in the Ontario public library and education sector and includes the Ontario Library Association as well as the Canadian Library Association; the two major television networks, CBC/Radio-Canada and CTV, are sponsors, as are a number of corporate and government agencies.

Current Network objectives are to encourage critical thinking about media information, media entertainment and new communications technologies, and to stimulate public debate about the power of the media in the lives of children and young people. One of the largest educational sites in Canada, the Network provides both curriculum-related media and Web literacy teaching materials for schools, and media awareness resources for community organizations.

There have always been two basic strategies for implementing public policy goals. The first is education, to achieve critical reflection and collective intelligence. The second is legislation and criminalization, to achieve control and suppression. The goal is the same--a better society. But a flawed means to a worthy goal will destroy the goal. Legislation is a flawed means.

I for one do not believe that bad ideas or bad images produce bad kids. Nor do I believe that there is a shred of evidence to support this simplistic argument.

We should worry much more about a lack of information than about too much or the wrong kind. Today, children of ten have potentially more information available to them than their great-grandparents had in an entire lifetime.

There are no reasonable grounds to fear contagion or uncritical acceptance of ideas *if* children have strong family values. What should concern librarians is young people who have access to only one view of the world, young people brought up with no knowledge of choice, no awareness of the rich diversity around them.

So let's teach them to be critical thinkers. As a *New York Times* editorial last year, critical of a legislative initiative to require anti-pornography filters on all school and school library computers in the United States, concluded: "Given the limitations of filtering technology, the best way to protect children is to teach them how to use the Internet. A software program simply cannot do that."

And another critic has observed: "Which is more harmful to children: occasional exposure to erotic material--or concealment of information about preventing pregnancy and the transmission of AIDS? That's the question confronting parents, school administrators and librarians when they consider installing blocking software on computers" (emphasis in original).

That question underscores my own fear: too little information, rarely if ever too much. Outsourcing moral authority to faceless and anonymous Internet guardians is no alternative to family values and family responsibility, librarian and teacher guidance, and individual critical awareness. Technology is not an alternative to private or social conscience: filtered ignorance is still ignorance.

If the analysis presented in this paper is accurate, it is irresponsible of tax-supported institutions such as libraries and schools to use taxpayer money to buy products that do not work as advertised: first we pay to obtain Internet access, and then we pay again to get rid of it! Ideas and images on the Internet are but shadows of reality: the only power they have is in human imaging, and for that the humans are totally responsible.

Let us urge the public to turn their energies and resources to the real problems of real children, to suffering and hunger, homelessness and health, education and caring. Let us urge them to abandon techno-ethics, to realize that the massive problems arising from innovative technology can not be solved by yet other technology. And let us also urge them to strive for a fuller awareness of the Internet in transition--that new forms of organization and access will emerge but that computer-generated censorship is unlikely ever to be a reliable solution to unwanted ideas and images.

At the very least, decision-makers owe their publics the most rigorous possible testing of filtering products before installation--not only on the basis of technical criteria but also for content outcomes grounded in indexing and retrieval principles. They also owe their publics wide consultation and opportunities for input to the filtering decision. And both of these obligations should be revisited on an annual basis in recognition of the rapidly changing dynamics of Internet technology.

These obligations to public accountability are all the more imperative in light of the "prior restraint" character of Internet filtering. As I noted at the start of my presentation, Internet technology is in a transition state, marked by accelerating unpredictability that challenges us to continually revisit our intellectual freedom positions and policies.

By way of postscript, I must tell you that I am the cultural product of Canada and Canadian values. Among such values is a belief in universal values--and indeed, a Canadian, John Peters Humphrey, was a prime architect of the Universal Declaration of Human Rights. While there is room for wide disagreement among Canadians about which values should be taken as universal, one that is indisputably universal for me is freedom of expression--that all voices should be heard, that communication with enemies and opponents is superior to killing them, that tolerance and generosity are superior to torture and genocide, that violence is the antithesis of intellectual freedom, that the first casualty of war and murder is human freedom in all of its manifestations.

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