



Future Frameworks

My Vision

To get to the library site,
type on the computer you're on,
in the address box at the top,
www.libraries.com

With a click of the mouse,
and a look at the screen,
all the libraries of Europe
can easily be seen.

Whether it's a story about the fairies glen,
or even ghosts and ghouls,
books from the past can be read with joy,
unless the readers are fools!

Libraries in the future can be on the net
on a special web-site address,
all the books and facts will be there,
and advice for bullying or distress.

The fact finder will be good for finding facts
the Second World War and more,
type in the facts you need to find
and you'll get more than you bargained for!

Or, if you want to get inspired,
why don't you sit and read a while,
and when you think you've read enough,
you can save your story on your file.

If you got stuck on your homework,
or if you want to do it there and then,
click on the homework help icon,
and you'll get ten out of ten!

If this work makes you hungry,
or you're thirsty for a drink,
because you're at home
you don't have to stop and think!

Words are a useful tool,
you can use them if you try,
so go to the dictionary or thesaurus site,
and you may find words that'll make you cry.

When you click on libraries of history
you can view libraries of old,
see how old the ancient books are
and see what secrets they unfold.

The smell of leather books of old,
in the future people will see,
crisp parchment and letters of gold,
written by monks in the tenth century.

View the furrowed pages,
and the writing advanced in years,
the words so strong can cause emotions,
laughter and some tears.

My library of the future,
will use technology,
to allow great books that are locked away
to be seen by you and me.

The great libraries of Alexandria,
and the monasteries of Rome,
will reveal hidden treasures,
in the comfort of your home.

For each book will be scanned,
electronically of course,
and a hologram created,
it's the new modern force!

The holograms are easily viewed,
across the Internet,
just log onto libraries of the world
and within a minute you'll be met.

Choose any library of interest to you,
any book, no matter how rare,
and with a tiny click of the mouse,
the hologram will be there.

You can marvel at the colours,
and the details in the book,
you will be so inspired,
you'll take another look.

All this can come true,
but not in the century we're in,
so maybe this library I created will be real,
let the future begin!

By Kirstie

Weatherhead High School
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What patterns were discerned in the tour through the twilight zone? We have identified trends in five landscapes and set out implications that seem to be significant to each landscape. There may be few that surprise readers but the purpose of this scan is not to unravel the fabric of the whole information world and reweave it into a new pattern, presented as whole cloth. The purpose is to surface trends and issues that, told as a whole story, might lead us to notice some aspect of a familiar trend, that when juxtaposed with another trend, exposes a pattern we did not notice before. “What haven’t you noticed lately?”

For the OCLC staff compiling this report, many trends were thought-provoking and informative. Three patterns in the fabric of information and knowledge management stand out among many. One might be described as a decrease (or disappearance in some cases) in guided access to content. The second pattern is perhaps an element of the first: there is a trend to disaggregation not just of content, but also of services, technology, economics and institutions. The third pattern is that of collaboration: gaming, open-source software, Web conferencing, blogs, instant messaging, learning objects and “hack fests” are all forms of collaboration, enabled by advances in technology. The three trends have deep implications for all the organizational areas of libraries and allied organizations.

Pattern one: decrease in guided access to content

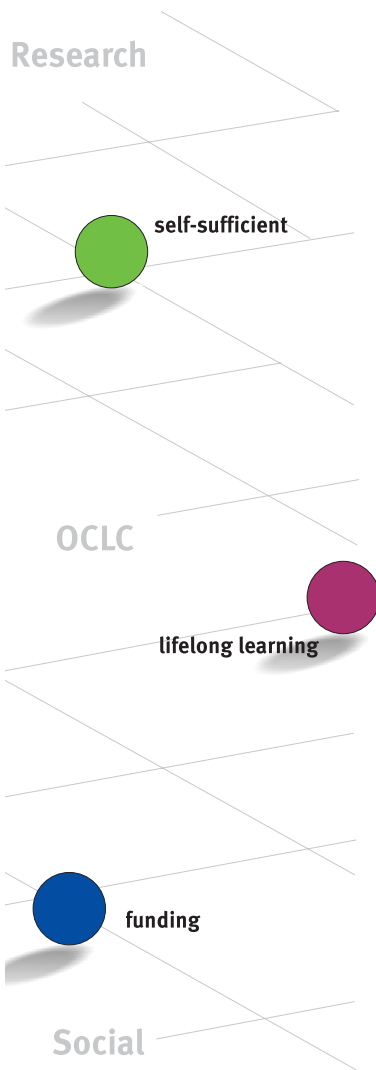
Guided access to content refers not only to humans acting as intermediaries between consumer and information object, but also to the containers of information—databases, reference books and library catalogs.

Human guides to content are librarians and teachers, but they are also bank tellers and doctors. All of these people mediate between the enquirer and the information: they interpret information into knowledge. “How much interest did I earn last quarter?” “What are the symptoms of a heart attack?” “Why is the sky blue?” “I need to find three articles analyzing the significance of birds in Shakespeare’s plays.” In the past, teachers, bank tellers and doctors synthesized and interpreted on behalf of enquirers who were, for a number of reasons, unable to get at the information themselves. Much of that specialized, proprietary information may still be under the control of the human guide but some of it is not, and it has made its way to the Web to be joined by literally millions of pages of content that is searchable, findable and usable without assistance from human guides.

In a physical world, the actual containers of information themselves guide users. A book, by its shape and size, by its cover and even price, alerts the reader to what might be inside. A popular magazine is easily identified by its glossy appearance and many photographs. No information consumer is going to accidentally pick up a copy of the academic journal *Brain Research* when it was *Entertainment Weekly* he wanted. To some extent, the “shapes” of the containers of information have been retained in a virtual world: e-journal pages look just like their print ones, a record in a library catalog or in WorldCat still looks much like the catalog card. But in a world where information and content increasingly are unbound from containers, the containers cannot act as guides.

“The needs of the library user are the most important consideration. Thus, for planning purposes, it is necessary to ask what are the user’s needs and how are they changing. This, then, provides a context for reconsidering library services and collections.”²

2. Gregg Sapp and Ron Gilmour, “A Brief History of the Future of Academic Libraries,” *Libraries and the Academy* (2003): 16.



*Information Consumer
is comfortable
traveling alone.*

As a result, the information consumer operates in an increasingly autonomous way and is frequently self-sufficient, choosing simple searches and search interfaces over complex ones.

Google and Amazon both offer very simple search interfaces. Google, in particular, relies on its search technology to deliver meaningful results, instead of searcher's knowledge of the search indices. Librarians and information professionals have had ample evidence for years that most searchers use a single term when searching—regardless of the sophistication of the interface. Why, then, do most library content interfaces still contain multiple search boxes? In one sense, the complex presentation is an attempt to guide searchers as they seek information, guaranteeing better search results if the guide is “consulted.” In the “Webby world” described in this report, more and more people do not seek out a mediator in their quest for knowledge, and are happy to pursue their information quest unattended by a guide.³

Even if Information Consumer wanted a guide, there are few available.

Libraries and aggregators of content have not capitalized on the chance to “lurk” alongside the information seeker in a seamless Web environment, and appear as an advisor and guide when searching is unsuccessful. “The key is to always be next to the user wherever the user is, invisible when things are working, magically materializing when they are not.”⁴ At the moment, the information consumer must make the choice to go to an “ask-a” service, or to a virtual reference service offered through a library to seek advice on the Web. The searcher must also come to the service, rather than the librarian coming to the user. No icon exists to add to a browser tool bar that will invoke a wise advisor.

It is human nature to seek information and advice as close to oneself as possible. This advice may live within a circle of family and friends, a personal library, and other reliable “close” resources, such as the Google search box that is so conveniently located on many browser tool bars. “There is a lot of groundwork libraries can lay that would be invisible, and we can stand at the ready as a trust circle when further service is needed. The unanswered question is how to move our circle closer, in a person's network, at the level of *their* need.”⁵

Pattern two: disaggregation

The second pattern to emerge from the twilight is the rapid and widespread reduction of content and institutions to much smaller units of use and interaction than in the past.

Librarians and publishers are familiar with the term “the least publishable unit,” which referred to e-journal articles at the time they came into vogue. Now, “microcontent” is generally used to describe even smaller units of content that come from some larger whole.

3. One interesting aspect of this is that information consumers seem to be quite comfortable using primary material—reading the digitized letters of George Washington Carver, for example, rather than a book about the letters—if that material is available.

4. Jenny Levine, e-mail, December 5, 2003.

5. Ibid.

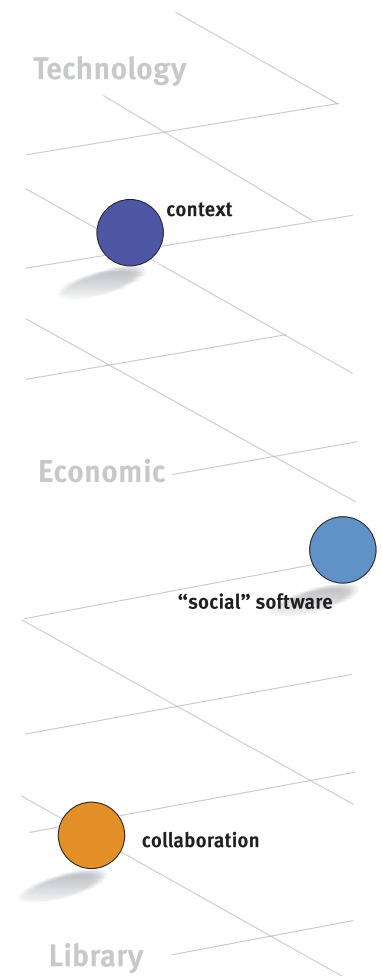
As e-journals proliferated, people realized it should no longer be necessary to purchase the entire journal if only one article was required. So, the journal as a definable unit became less important. As more and more content made its way to the Web, the granularity of the least publishable unit increased. It is possible and often even easy to locate a table, a fact, a quote, a picture and single song from what used to be aggregated, monolithic content: books, journal articles, government reports, records and CDs. Increasingly, the information seeker doesn't care what the original container looked like, and wants to be able to use this microcontent immediately. The information is fungible and the boundaries of the containers fade and blur. Content is disaggregated from its original container. Amazon's "search inside" ups the ante in this arena, raising consumer expectations that content is searchable and definable at a micro level, and, we predict, payable for—at the micro level. Micropayment for microcontent is the next logical step.

Institutions and services, and the technologies that enable them, are increasingly disaggregated. E-learning disaggregates the learning process from the institution as students avail themselves of the "least unit": a course can possibly be independent of place and time—tied to the parent institution in name only. Banking online reduces "the bank" to a series of activities, and the ordered presentation of a library's physical collection of content and its highly structured services can be irrelevant and even inhibitory in a digital world. A nine-year-old's Web page about spiders coexists with a presentation at a conference by the world's expert on spiders and may be deemed more useful to a nine-year-old searcher than the expert's paper. It's about more than just content. It's about context. We'll return to this notion of context: it's really important.

Pattern three: collaboration

In a whole variety of ways, using all sorts of technology, it really is becoming easier for people to connect to do things together. The pattern that clearly emerged as we scanned the landscapes is that the technology adoption curve is very fast for devices and environments that allow people to work together and talk to one another seamlessly—untethered from classrooms, labs, electrical outlets and time. The desire for better collaborative tools, software and environments, however, is not new. Michael Schrage wrote *Shared Minds: The New Technologies of Collaboration* in 1990 about the technologies on the horizon that promised to encourage and foster collaboration. Almost 15 years later, we might all truly be poised to reap the benefits of collaboration technologies. Bill Gates believes that the next great leap forward in computing terms will engineer social change as barriers among people, systems and information disappear. He touts "Longhorn," the next edition of Windows, as a collaboration framework, rather than a computing platform.⁶

Perhaps it's time to coin a new term to use in a seamless computing environment. Rather than "connect" or be "connected," people will "context"



*Librarians have always
excelled at providing
context.*

6. "Bill Gates at COMDEX 2003: The Era of Seamless Computing," *PressPass* (November 16, 2003), www.microsoft.com/billgates/.

or be “contexted.” In an infosphere that continues to get larger and more diverse, context will be ever more important. As we’ve discussed above, the people and institutions that acted as guides to content disappeared into a virtual world and have not been replaced in any meaningful way.

Librarians have always excelled at providing context. Amazon and others work to emulate this role by building context into personalization systems and other collaborative technologies. Amazon has, in essence, built a readers’ advisory service into its Web site. “People who read this book also liked these titles.” The service that librarians offered to readers in a pre-Internet, face-to-face world has not been translated into the catalog or library Web site environments. There are many readers’ advisory Web sites, but they offer no personalization features or advisory technology beyond lists of titles organized in various ways. Context is not there. Amazon currently fills a void. Privacy issues in an online environment might have prevented librarians from acting on the need people have for context. What is clear from the trends scanned is that people hunger for context and environments that encourage dialogue, conversation and the ability to share. Librarians by nature will welcome virtual work environments that encourage dialogue, conversation and the ability to share and collaborate with colleagues and with information consumers.

It is important to note that a search for content and context in the infosphere may not yet reveal libraries and their sister organizations. But a visit to a physical library—particularly a public library—will reveal a place that is full of people seeking content and context. As we observed in the *Research and Learning Landscape*, libraries are places of social assembly and are vitally important to their communities.

*“Human systems need inputs of human energy to do well. Everything else—the Internet, agents, wireless, knowledge-mining—is contingent. They’re support, not the thing itself.”*⁷

Future frameworks

What might these three patterns suggest for the future of libraries, allied organizations and the companies that serve them? We will argue that the only way to answer this question is to re-view the landscape using the lens of the information consumer.

How does a library appear today through the information consumer’s lens? What is the shape of the user’s “infosphere?” The following diagram suggests how the information grid of material might look when viewed from the user’s perspective.⁸

How do the users view the library in their personal infosphere? The library is in focus when a book is needed or if attempts to find the materials on the Web are unsuccessful. But just how much mind share the library holds is fuzzy, based on the patterns surfaced in this report. And perhaps, the goal of libraries might be invisibility, in the sense that the service is ubiquitous and fully integrated in the infosphere—to be in the circle next to the user.

7. John Thackara, “The Thermodynamics of Cooperation,” In *The Bubble* [online magazine] (September 2003): n.p. From Doors of Perception: www.doorsofperception.com.

8. Based on the *Collections Grid* that was used to frame the interviews done for this report.

After all, technology and services are most welcome in our lives when we do not have to devote much thought to them. We press a switch and light comes or goes. Expecting the information consumer to pay attention to the differences between William Shakespeare the author and William Shakespeare the subject as search terms is akin to expecting Joe Householder to know if the red wire or the black wire should be grounded before he plugs the lamp in—and to expect Joe to go to RedWire.com to figure out what happens if he’s wrong. Thankfully, clever people have hidden all this technology inside a box and millions are saved from a shocking experience.

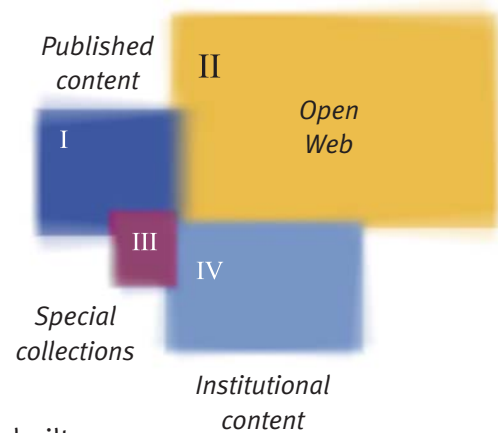
What might the trends presented in this scan suggest for OCLC and other organizations working with libraries to deliver services and products to information consumers?

Some questions arise: Is there a future for the proprietary containers built to guide access to content? If content is increasingly sought after in a “least publishable unit,” does it make sense to devote many resources to building containers? If so, what should the mechanisms of mediation be, and are these being developed? Can OCLC disaggregate itself and its services in order to meet the needs of self-service consumers interested in microcontent? And how can OCLC and others link the worlds of order and chaos, and empower the information consumer to be well-guided? OCLC members and participants value structure and mediated content. Evidence suggests that libraries’ constituents do not value these elements to the same degree. Who then—which constituents—should OCLC research when building a product and service strategy? How can OCLC and other organizations collaborate with libraries to effect changes that bring the collective wealth of libraries to the attention and desktop of the information consumer?

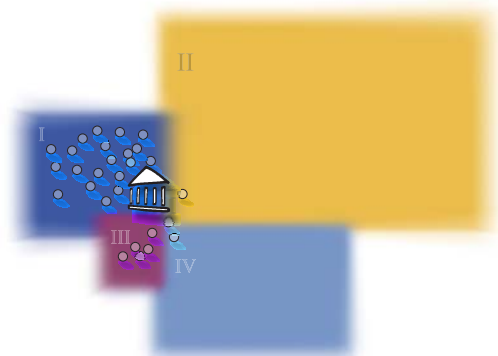
The challenges inherent in such changes should not be viewed as threatening but as an opportunity for renewal and rejuvenation. But how do we decide what to do? Libraries and museums in particular have introduced new services and programs, built up over the old ones in almost archaeological layers. But preservation of everything is an unaffordable luxury. We have to embrace the opportunity of the changed landscape, not reconstitute the old landscape in a new space.

“It is almost impossible to achieve the requisite awareness of what we haven’t noticed while we are immersed in a nice, comfortable, or at least accustomed environment. We are all subject to the ground rules, that is, the rules and unperceived effects that govern our business ground or context. It is like asking a fish to suddenly become aware of water. [Marshall] McLuhan observed, ‘One thing about which fish know exactly nothing is water, since they have no anti-environment which would enable them to perceive the element they live in.’ It is only when it is pulled from the water that

A user’s view of the “infosphere”



Libraries’ space within the user’s “infosphere”



“We have to preserve the identities and reputations we have built in our communities—while morphing into entities that are very different.”⁹

the fish becomes acutely aware of its former environment. The challenge in achieving awareness to notice the formerly unnoticed—what we call ‘integral awareness’ of our total business environment—is to create an appropriate anti-environment.”¹⁰

The anti-environment. What if libraries and OCLC and all the other players in the world of structured access to information erased the organizational charts, the artificial separations of content, the visible taxonomies, and the other edifices real or otherwise built to bring order and rationality to what we perceive as a chaotic universe? What if we built an infosphere rich in content and context that was easy to use, ubiquitous and integrated, designed to become woven into the fabric of people’s lives; people looking for answers, meaning and authoritative, trustable results? How do we take information, information sources and our expertise to the user, rather than making the user come to our spheres?

If all the trends in this environmental scan were distilled into one statement it might look something like this (incredibly obvious) truism: **Libraries and allied organizations do not exist separately from their communities.**

There’s a perhaps apocryphal business school example that is instructive here. When Joe Householder goes to a hardware store to buy a drill, he’s not actually buying a drill. He’s buying the ability to make a small hole. Perhaps libraries and allied organizations have become overly focused on drills of late.

In 1971, Fred Kilgour built a really good drill, better than any others that were made around then, and he got it to the marketplace before other good drills were built. That drill is WorldCat. But, the power of the Kilgour drill was not that the drill bit was more robust than others, or that the motor was larger. It was that a good tool gave people a better way of doing things—specifically cataloging things other people had already cataloged. And that is a very good and powerful model. It saved people and institutions time, and allowed, for the first time, a way of seeing what other libraries had in their collections. A technological innovation became a collaborative revolution. With WorldCat as the “metadata hub,” OCLC has been able to broaden the scope of its services over the years, helping libraries serve Information Consumer. How do we together build on this remarkable legacy to capitalize on collaboration technologies, push technologies, personalization, open-source software, gaming and the energy of young information professionals—and take our world to Information Consumer’s world?

Coming together as community

There are so many interesting challenges inherent in our landscape that it is not surprising that we have become fragmented as a community: there’s something there to interest everyone. But, it is time to put individual interests aside and come together as a community to reestablish our

9. Robert Coonrod, “Creating the Digital Future,” *First Monday* 8, no. 5 (May 2003): n.p., www.firstmonday.dk/issues/issues8_5/index.html.

10. Mark Federman, “Enterprise Awareness McLuhan Thinking,” Keynote speech at the *Information Highways* conference, Toronto, Canada (March 25, 2003): 4.

preeminence in search and retrieval, information and knowledge management, metadata creation and collaboration. Libraries are exemplars of the notion that the whole is greater than the sum of its parts. Collaboration has built the foundations of modern librarianship and must form the foundation of the new “infosphere” in which libraries and allied organizations marry technology with collaboration to deliver services to the information consumer.

Libraries, museums, historical societies and information industry companies are filled with very bright, dedicated people who sit on committees, attend conferences, deliver papers and, perhaps, now and then, wake up at 3 am wondering, so, what is the future of libraries, of my museum? One trend that was evident in this scan was that for at least ten years, all those bright people have been writing and speaking eloquently about possible futures. Yet, not much has fundamentally changed. Rather than dissect why this might be so, here’s a proposal.

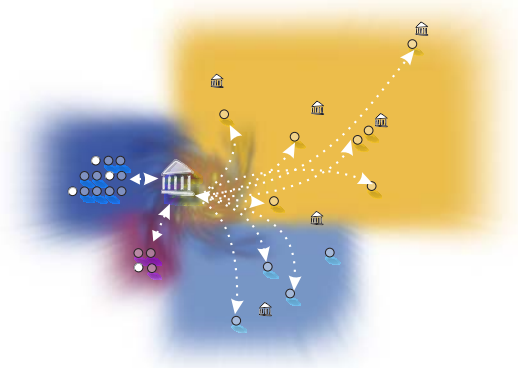
The library community could hold a “hackfest,”¹¹ an agenda-less conference that identified a set of problems that needed fixing and then let loose clever people to come up with solutions. “Get a bunch of smart and capable people in a room with the time allocated to focus on a problem or a set of problems, and magic can happen.”¹² Some of those clever people would have to be information consumers, young and old, so that solutions were designed *with* them, not *for* them. “We guess at how to do this quite a bit, but I don’t think we actually study these issues outside of the library world, which is where it is more important to be these days. In a way, that’s the ‘anti-environment.’ We already have a lot of research explaining how users fit into our infosphere. Now, we need to start with bleeding edge adopters, all the way down to those most left behind by the digital divide (by necessity or by choice) and follow them around, ask questions, observe them to find out how libraries and our services fit into their worlds. It’s a very key difference and you’d have to start with no existing assumptions of how library services already reach these people, which can be very difficult to do.”¹³

Let the future begin

There are, of course, many more implications inherent in this environment than only those suggested in this scan. Many trends have not been noted, and just about all specific products and services that libraries, allied organizations and companies offer have been left out. And there are many more questions that arise than are expressed here.

Many readers are familiar with Douglas Adams’s *Hitchhiker’s Guide to the Galaxy* and subsequent works. It seems relevant to end this environmental

Potential role of libraries in the “infosphere”



Libraries are exemplars of the notion that the whole is greater than the sum of its parts.

11. Roy Tennant reported in the November 15, 2003 *Library Journal* on the energy and success of the HackFest that took place in 2002–2003 at Access conferences.

12. Roy Tennant, e-mail, December 2, 2003.

13. Jenny Levine, e-mail, December 10, 2003.

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so maybe this library I
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let the future begin!*

Kirstie

scan with a reminder that asking the right question is more important than asking a lot of questions.

“The answer to the Ultimate Question of Life, the Universe and Everything—as given by the supercomputer Deep Thought to a group of mice in Douglas Adams’s comic science fiction series *The Hitchhiker’s Guide to the Galaxy*—is 42. According to the *Guide*, mice are 3-dimensional profiles of a pan-dimensional, super-intelligent race of beings. They built Deep Thought, the second greatest computer of all time and space, to tell them the answer to the question of life, the universe and everything. After seven and a half million years the computer divulges the answer: 42.

‘Forty-two!’ yelled Loonquawl. ‘Is that all you’ve got to show for seven and a half million years’ work?’

‘I checked it very thoroughly, said the computer, and that quite definitely is the answer. I think the problem, to be quite honest with you, is that you’ve never actually known what the question is.’”¹⁴

Information on the Web is fragmented; disaggregation of content splinters it further. Seamless computing may expose even more content to Information Consumer. Few institutions outside of libraries have the ability to put the pieces of the puzzle back together or build the trails for navigation, but it is critical that the right questions are asked.¹⁵

The question is not what should be digitized and preserved. The question is not what role will the library play in the institutional repository. The question is not MARC or METS or MODS. The question is not how will retiring librarians be replaced. The critical question is how does Fazeela in the Maldives complete her school assignment on wolf snakes? How does Adrian in England finish his family tree? How can Kofi in Ghana find scientific data on mercury levels in Volta Lake?

The ultimate question of life, the universe and everything is: How do we together, as a community of libraries and allied organizations, move our trusted circle closer to information consumers at the level of *their* need?

OCLC wants to hear from you. Each landscape ended with a set of implications we think are apparent from scanning the environment, as well as a set of questions that arise from those implications. Please answer these questions. Ask others. Suggest solutions.

The Web version of this report is available at www.oclc.org/membership/escan/ and you can send us your comments from there. You can also send e-mail to escan@oclc.org or send mail to **Environmental Scan, OCLC, MC 235, 6565 Frantz Road, Dublin OH, USA 43017-3395**.

Help OCLC recognize patterns in our shared landscape.

14. Wikipedia, the free encyclopedia, www.wikipedia.org/wiki/The_Answer_to_Life,_the_Universe,_and_Everything.

15. Jenny Levine, e-mail, December 4, 2003.