

Toward the Nodal Library

A Discussion Paper on the future of the UBC Library in the
emerging eLibrary environment.

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Toward the Nodal Library - Executive Summary

Under the impact of disruptive change, coming in the wake of new developments in information technology, the traditional definition of the library in terms of a repository or collection is becoming steadily less viable. A new definition or model is needed instead -- that of the library as a node in an information network, providing a local or regional locus of information services, access points, and meta-informational expertise, commonly (but not necessarily) associated with a physical collection. Two themes that immediately follow from this model -- the mediation of network information to the local community (which may be as large as a national region or as small as a campus or neighbourhood), and the mediation of local information to the network -- are examined in more detail. This involves, in the first case, the library as information broker and architect, as well as personal information appliance and information consultancy. In the second case, it involves the library as curator of digital information collections, whether of its own digitized resources or of material collected from its community, as well as an information disseminator or publisher, and as a label for a decomposable assemblage of services and resources that can be made available to the network themselves. Two further themes, related to the question of the changes required by the new model, are discussed: the ongoing role of the physical collection, which remains of great practical importance but which has requirements that are quite distinct from those of networked information; and the vital importance of access to, and provision of, so-called "pure data" -- meaning simply data stripped of its presentational wrappings -- for the full development of the nodal library as such.

After this quick look at where we as an institution need to be, we examine even more quickly where we are now. A number of promising signs at UBC Library in particular are noted, including a collaboration with the Medical Faculty in curriculum design, a multi-year program for the replacement of print journals with online versions, a range of old and new digitization projects, and the early development of a functional if piecemeal information infrastructure based on ColdFusion. Along with those encouraging signs, however, there are also a number that are somewhat *discouraging*, many of which appear to derive from, or at least be associated with, the enormous financial, and therefore organizational, burden of its legacy "Integrated Library System", designed to serve the needs of the library as physical collection. This is a general condition with which all libraries are struggling in various ways, however, and a number of others are also finding innovative ways to begin the process of breaking the old mold -- some examples are simply listed.

Finally, then, we look in very general terms at what we need to do to ensure that we get from where we are now to where we need to be. The decision that our primary business is information rather than collection will require strategic boldness, and will lead to some far-reaching effects in organization, policy, and practice. A bold approach on a strategic level, however, will need to be matched with an exploratory and highly flexible approach on a tactical or implementation level, as new developments can always render any particular project quickly obsolete. Within this framework, some general but still concrete steps are suggested over short- and longer-term timelines. In the end, it's recognized that the future isn't something to be merely envisioned, it's something that must be built -- and that doing so, despite the difficulty of relinquishing some of the past, will position the library as a facility at the heart of the emerging Information Society, and librarians among its leaders.

Toward the Nodal Library

[Node](#) : Any point in a network that can influence the flow of data on that network.

Introduction: Envisioning the Future

What comes to mind when you hear a phrase like "the library of the future"? Some sort of streamlined, Art Deco-ed, Jetson's kind of thing, perhaps? Robot librarians, floating books, virtual-reality card catalogues, etc.? Well, perhaps not. The phrase itself, after all, has an ironically retro, old-fashioned ring to it now -- for good reason, we've become suspicious of the sort of gushing, hype-ridden futurism that often seems just to exaggerate the obvious and miss the significant. And yet ... how are we to deal with the future at all if we don't make some effort to imagine it? And then how, exactly, would we go about doing that -- envisioning the future of the library?

Let's consider two possibilities. One is to start from where we are, and extrapolate trends that we see in our surroundings and our recent past. This has a kind of natural, grounded, common-sensical appeal that can be a useful antidote to the flurry of buzzwords and abstractions that so often characterizes discussions of "the future" of anything. But it also has certain limitations -- in particular, it requires some assumptions, explicit or implicit, about the nature of the change process itself: not that it need be "linear", exactly, but that it is, in some defined manner, continuous. What if, instead, the kind of change we face is *discontinuous* -- abrupt, sudden, or "disruptive", undermining what we've seen to date, dashing expectations, and breaking up existing patterns and trends? Change doesn't always come in this form, of course, but occasionally it does, and on all scales. Haven't we, in fact, been through one such upheaval, with the advent of the graphical web browser in the mid 90's, altering fundamentally the way in which people accessed information? And now, just a decade later, might we not be in the midst of another one, with the rapid proliferation of the so-called ["Web 2.0" phenomenon](#)¹, changing not just the way people access information but the way they *relate* to it, putting in question the origins, uses, structure, and very nature of information?

If that's the situation we're in, or even close to it, then we need another way of imagining the future -- one that focuses not so much on trends as on implications, and starts not with where we are but with where we want or need to be. This focus takes us outside of the library and its surroundings, and looks at the changes inherent in the culture at large, such as:

- the emergence of a new information ecology, in which traditional sources of authority (credentialed experts, recognized reference works, news media) are being pushed aside by an assortment of problematic but rich and varied sources like blogs and wikis, the pre-eminent, transformational example being the Wikipedia²;
- mass digitization projects like Google Books (and similar European initiatives), once thought to be impossible, or to require centuries;
- the rapidly spreading access to wireless broadband, and the rise of the always-on, always-connected society;
- the emergence of a new kind of information user, or consumer-producer, with expectations conditioned by Google-Amazon-eBay;
- the appearance of discipline-based "informatics" to manage [the scale and complexity of the data being generated](#)³;

- new, more complex modes of scholarly communication other than the traditional peer-reviewed journal, and [new kinds of research behavior](#)⁴
- the proliferation of the digital equivalent of "grey literature" or ephemera, as individual and organizational websites come and go;
- the rise of new kinds of information spaces, or "cyberspaces", such as VR worlds like "Second Life", social worlds like "MySpace", geographical worlds like Google Maps, image/sound/video worlds such as Flickr/iTunes/YouTube, etc.;
- the growing issues and growing *complexity* of the issues around "digital rights", and the increasing importance of the various "open access" initiatives that are struggling to come to terms with, or in some ways to circumvent, those issues.

And these are only some of the examples or portents of far-reaching changes afoot, as ever-increasing amounts of information, services, work, play, and community all are shifted to the virtual realms of the global network. What does a shift of that nature and magnitude, then, imply for the library as an institution?

Not an easy question to answer, obviously, but attempting to do so may lead us to ask ourselves what a library *is* in the first place. Traditionally, the very meaning of the word "library" is bound up with the notion of "repository" or "collection", and this association may well be unbreakable. But if so, then it's likely that the library's future, as a distinguishable social institution, is one of stately but steady decline in cultural relevance. Not because there won't be a need for information storage, but just because such storage will increasingly take such a variety of fluid and intangible forms, so subliminal, so integrated into the social and technical fabric of our lives, that one would no more think of going to a particular repository for information than one would think, any longer, of going to a community well for water. Which, in a larger perspective -- and with due respect for the waning of another institution and its associated profession -- may be just fine, after all; the institution served us well in its time, would go the sentiment, but its time is past, or passing.

And yet ... in this networked world, the torrent of information produced, transported, and consumed, of all kinds, and at all scales or levels, continues to increase at unprecedented rates, constantly threatening to drown us all in data, claims, suppositions, questions, errors, reports, documents, trivia, facts, and dubious "facts". Certainly, individuals and groups directly involved make increasingly strenuous and often ingenious efforts to cope with the deluge, and certainly Google and its like are doing everything they can think of (including spinning off a variety of services, products, and projects in perpetual beta) to provide broad, generic, high-level control systems and access mechanisms. But despite all these good efforts, information, time and energy are increasingly being lost or wasted in this digital flooding -- what's needed is an entire social/cultural *infrastructure*, capable of managing information and providing informational services in a variety of forms and levels, across diverse communities, over long time-frames. What is needed, in other words, is something very much like libraries, but libraries focused on, and organized around, not information *repositories* but information just as such. In this sense, libraries would no longer be seen as relatively autonomous institutions with their stand-alone and heavily redundant collections, but rather as nodes in an information network, strongly connected to the whole, but providing a local or regional locus of services, access points, and meta-informational expertise, often (but not necessarily) associated with a physical collection as an adjunct. In *that* sense, the future of the library is as open and expansive as the network itself.

The sections that follow assume that "library" is defined in the second, nodal sense, and ask a series of questions -- starting with where we ("we" being the collective sense of the library as an institution) want or need to be, as implied by the kind of changes underway in the culture at large; coming back to look at where we are now, in both positive and negative aspects; and finally asking what we need to do to get to where we need to be. We hope it's needless to say that the answers provided below those questions are in no sense final or conclusive -- they're intended rather as thoughts, observations, and suggestions, and therefore as just the start (or so we also hope) of a useful conversation.

Where do we need to be?

If we take seriously the idea of the library as a node in an information network, then two main themes quickly become apparent: the first is the library's role in mediating network information, along with value-added services, to its community; and the other is the reciprocal role of providing local⁵ information, in standardized format, to the network. Let's look more closely at some of what these entail:

1. Mediating network information to the community

One aspect of this theme is actually quite old and familiar -- this is the library in the role of information "broker", negotiating and purchasing licenced access to important proprietary resources for its authorized users. (Libraries have become accustomed to thinking of the resources so licenced as part of their "collection", even though they don't, as a rule, store them themselves, don't have access rights beyond the negotiated time frame, and often cannot control which individual items are included in the negotiated access package -- it seems both clearer and more true to view them as centrally collected resources to which the library simply mediates or brokers access.) For much of the history of the library's involvement with such resources, however, they were entirely separate from one another, and users would, for example, rather laboriously have to collect citations from one database and then search for full-text sources in another. The advent of the OpenURL standard offered the possibility of automated linking across different products and vendors, from meta-data source to information target, and only required a one-time set-up with each source database. More recently, OCLC has established a [registry](#)⁶ which, along with a new, more lightweight protocol for inserting OpenURLs in links ([COinS](#)⁷), will make this sort of linking between diverse resources available for anything: blogs, wikis, academic papers, etc. With these and further developments along these lines, we see the library's role as information broker becoming increasingly invisible, as it becomes more deeply embedded in the information infrastructure of the society at large.

Another aspect of the same theme, however, is quite visible -- this is the library in the role of information or knowledge "architect", building and maintaining interfaces to network information appropriate for its particular communities. Such interfaces may be search boxes, browsable displays, or both, and may combine the output of multiple network resources. And here again, we've seen initial moves along these lines for a while now, in everything from simple "A to Z lists" of resources, through home-grown database search functionality, to more complex, but still limited and problem-ridden commercial "metasearch" products. But by and large these are all just aspects or portions of the library's interface, standing apart from one another,

and stuck like isolated candles in a static, one-size-fits-all web site; it's increasingly evident that what's really needed is a much more flexible interface -- or, better yet, interface *infrastructure* -- that can:

- accommodate a wide range of resources, *types* of resources, functionalities, services, etc., in a coherent, consistent presentation;
- be easily and quickly configurable to support different uses or situations -- e.g., user types, subject area or discipline, classes, sub-communities, etc.;
- be *personalized*, so individuals can in effect craft their own interface, cutting across all the different types, subjects, sub-communities, etc. in which they're involved.

In this sense, there would no longer be a single library website, apart perhaps from a fairly generic, brochure-like default, but rather a library web infrastructure, that would be capable of *generating* a variety of web sites to suit the needs of particular communities, situations, or uses.

A third aspect is strongly related to the one above, but is a new and significant enough development to warrant separate treatment -- this is the library in the role of personal information appliance, where "information" is now construed in the more interactive and malleable "web 2.0" sense. This is a rapidly mutating information environment, involving elements that might seem, oddly, both familiar and strange: tags, comments, "mash-ups", feeds, etc. -- content that's not just user-controlled, in other words, but user-supplied. Such a development for libraries goes beyond just letting users add reviews to catalogue records -- it means providing users with a kind of sharable work-space within which they have access to library-mediated network resources and functionality, and to which they're able to add information of their own which then becomes, potentially, available to the network. Users, in such an environment, can become their own librarians after a fashion, building their own collections of information resources to be shared with others (for early examples of this sort of thing, see del.icio.us⁸ or LibraryThing⁹). This aspect is a good illustration of the nodal library mediating the *two-way* flow of information, and creating communities as it does so.

A fourth (and for now final) aspect of the library mediating network information picks up on this theme of two-way flow -- it involves the library in the role of information consultancy. This is really just an extension of one of the oldest and most familiar of library services: reference. But as scholarly and research behaviors begin to change under the impact of the networked society -- as vast quantities of information are generated and similarly vast quantities become available as input -- reference services too will need to evolve. Subject information specialists will need to be more involved with research projects and curriculum design from early stages, and so will have to become more familiar with the informatics of particular disciplines while still maintaining a cross-disciplinary, "meta-informatics" view that keeps them in touch with the broader information processes of the networked environment. This may involve, among other things, the integration of information literacy education into the workflows of students and scholars, the creative exploration and use of new tools and formats that become available (e.g., blogs, wikis, "mash-ups"), and the shift away from a reactive, "patron comes to us" model of reference toward a more proactive, embedded and engaged model. And so the theme of two-way mediation re-appears, as specialized information consultants aid users both in finding their way through information mazes, and in managing the information they generate according to cultural and network standards (e.g., metadata, preservational strategies, etc.).

2. Mediating community information to the network

The first example of this kind of mediation, from local information sources to network, is also, by now, a familiar one -- it's the "digital library" in the narrow sense, in fact, or the library in the role of digital, or *digitized*, collection manager. The local information sources, in this case, are typically drawn from the library's own print or physical collections, and the library undertakes the task of selecting, digitizing, organizing, and presenting those resources in a network-accessible form. This process has been going on, in varying degrees, at many libraries for a number of years now, and the result has been a slow but steady accumulation of a substantial number of high-value collections potentially accessible to anyone anywhere. But these collections have also been generated in a wide variety of forms, formats, displays, access methods, meta-data descriptions, granularity levels, and so forth, all of which compromise their inter-collection coherence and hamper their actual accessibility. Efforts like those of the Open Archives Initiative are a start toward providing some mutual compatibility between digital collections, but much more will be needed, both on national/global levels and on local levels, to ensure that the rich information sources being produced are fully network-accessible in browsable, searchable, cross-collection interfaces.

At least as important as the digitizing of the library's own physical resources, however, is the collection, preservation, and presentation -- in a word, the *curation* - - of the local community's resources. Libraries have long done this, in a somewhat informal way, for locally generated print or physical resources, often called "grey literature", but even this informal attention has usually been lacking for similar kinds of information resources "born digital" -- the network equivalent of organizational, or event-related (or even individual) brochures, pamphlets, announcements, documents, etc. that often carry much of the detail of history. Libraries as local network nodes have an obvious responsibility to develop systematic approaches toward the management of this kind of information, and the integration of it into that general network interface spoken of above -- a role that libraries' funding sources need to appreciate and provide for as well, it should be said.

For a certain kind of locally-produced digital information, in fact, libraries (of a certain type) have already been involved as curators, at least to some extent -- this is the research data, information, and knowledge produced in academic institutions, and somewhat haphazardly collected and maintained in various versions of "institutional repository". To this point, the role or function of the "institutional repository" seems a bit unclear: should it strive primarily for ease of access -- a searchable, browsable showcase of institutional resources (a campus-wide extension of the digital library)? Or for information security and resolvability -- a long-term digital archive of institutional resources? Or for comprehensiveness -- an assortment of institutional digital objects of all kinds, levels, and media? It might be tempting to say "all of the above", of course, but it's also realistic to accept that differing objectives sometimes bring with them difficult-to-avoid trade-offs, and the need for decisions. Certainly, though, a major aim of IR's in the larger informational landscape is to create a system of interoperable, inter-searchable repositories on a global scale, a development which would have a considerable impact on scholarly communication and on research itself. And factors that lie in back of much of this development may well have the most to say about the form or forms by which libraries can help mediate the output of academic research and pedagogy -- factors such as:

- the Open Access/Open Data movement

- the appearance of Very Large Data Sets (e.g., in astronomy, genomics, linguistics), and the rising importance of disciplinary informatics
- the changing nature of scholarly research and communication, including the spread of the "disciplinary repository", such as arXiv, CogPrints, etc.

What libraries can and should add to this rapidly changing picture is a certain culture-wide and historical perspective on information, including cross-disciplinary descriptive standards, copyright and digital rights issues, and both an open and a preservational approach to access.

Given the rapidly increasing role libraries are playing in the collection and dissemination of networked information generally, we might, in fact, begin to consider the library in the role of publisher, at least of academic content. [Stanford](#)¹⁰, the [University of Michigan](#)¹¹, and the [California Digital Library](#)¹², for example, already have significant publishing initiatives underway, and UBC Library is responding to requests from faculty to provide some publisher-like services for locally-managed open-access ejournals. As scholarly information and associated communication processes become steadily more open and protean in form (see below, on "The importance of pure data"), libraries may well turn out to be better positioned than traditional academic presses to provide at least some of the services and expertise that a new publishing environment requires. Libraries, which have long been in the position of licencees of information resources, may soon find themselves in the unfamiliar role of licensors. In any case, the role of publisher, whether alone or in partnership, is one the library may have to be ready to assume when and as needed.

There's one other aspect of the nodal library that should be mentioned in this context of mediating local information -- and this involves thinking of the library as a decomposable assemblage of resources and services, which makes *itself* available, in whole or in part, to the network and to various other network nodes or access points. This is in some ways similar to the idea of the library as a "personal information appliance" mentioned above, but it's also in some ways the inverse -- that is, in this view the library is no longer a single entity, selected and configured from some basic or default model, but rather simply a label for a set of functions, any of which can be made available to the network to be easily imported into a wide variety of other network contexts, such as elearning systems (from pre-school to post-graduate), entertainment devices, work or research sites, home networks, etc. It's much like what Wendy Pradt Lougee referred to as "[diffuse libraries](#)"¹³, but extended beyond the academic world, and perhaps worked even more deeply into the infrastructure of society in general.

The role of the physical collection

The nodal library, as we've seen, doesn't *need* a physical collection to perform its essential functions, but of course virtually all actual libraries have such collections, and they continue to consume the bulk of the library's resources, both financial and human. There's a good reason for this -- it's certainly *not* the case that "everything is on the Internet", and, the likes of Google Print notwithstanding, it isn't likely to be the case anytime soon. (The twin obstacles of a workable digital rights regime and a comfortable digital reading device will keep the printed book in service for the foreseeable future, quite apart from the gaps and unknowns involved in any mass digitization project.) Still, the fact remains that, as more and more material *does* appear on the Internet, usage patterns are changing rapidly -- ejournal use is soaring, for example, and circulation statistics are dropping. It's becoming increasingly difficult to justify the high proportion of library budgets devoted to a

declining information medium, and in particular to support the use of expensive physical space simply for book stacks. Among the likely results:

- there will be increasing use made of physical storage (on-site or off-), with the corollary that there will then be increasing need for a rich *online* browsing experience for the physical collection as well as the digital, perhaps along the lines suggested by Amazon;
- it may well be the case that the development of a fast, efficient, and easy-to-use ILL service (even involving *buying* from the likes of Amazon when necessary) would be a more cost-effective use of funds than continuing to build up redundant "just-in-case" collections. (Compare, e.g., with Lorcan Dempsey's theme of "[Discovery to Delivery](#)"¹⁴.)

That said, however, the physical collection will be a valuable adjunct to the nodal library indefinitely, and will continue to require the services that have become so well-defined and so specialized for it: acquisitions, cataloguing, shelving and circulation. And for that reason, rather than trying to bend such functions, with their associated and well-understood procedures, work-flows, skill-sets, and knowledge, into shapes necessary to accommodate the quite different needs and demands of network information, a good case can be made for keeping them together as an organizational unit, and centred on the list or database that is devoted to what the library physically holds -- that is, the catalogue.

The implication of that, in turn, is that the catalogue should no longer be used as merely an easy way to achieve a "single search" form for users -- it hasn't been, isn't, and never can be that in any case -- nor as a kind of catch-all database for every resource or object that we'd like to count in our "holdings", but rather as the database it was originally designed to be: the comprehensive record of the bibliographic description, physical location, and circulation status of items comprising our physical collection. Network information doesn't need the last two kinds of metadata, clearly, but often does require other kinds, relating to issues of access, digital rights, network infrastructure, information architecture, and others, that simply don't fit well within the restrictive or specialized framework of the MARC record. And if we let go of *that* framework then we might also wonder whether we should let go of the somewhat hallowed idea of "the catalogue" as the centrepiece of the library as a whole -- we might let it become simply another database, with an important but no longer central role to play.

The importance of pure data

First, it's no doubt necessary to say what's meant by the phrase "pure data" (for want of a better one): this simply refers to data stripped of its presentation or interface context. To see why that's important, we have to look at the problems presented by information in its, to this point, usual guise, as obtained from the network or collected from the community -- embedded in various fonts, markup, layouts, colours, images, and so on, all considered essential for human usability, but all different across the myriad different network resources that the library mediates, and usually impervious to any sort of programmatic analytic access that would let the data be re-purposed or re-used in different contexts, or mixed and matched to suit different needs. The result is that the library's users are presented with a confusing array of interfaces, each of which stands alone as an essentially sealed information environment -- which, among other things, represents a serious barrier to the nodal library's efforts to present consistent, coherent interfaces suited to its different user communities, needs, situations, etc.

Some network products, of course, allow for limited amounts of customization (often involving little more than providing a local library banner), but this doesn't begin to address the problem of a largely closed system. "Screen scraping" is an apt metaphor for the sort of work-around too often used with such environments to extract usable data from the heavy overlay of mere presentation artifacts, but this is a very breakable and error-prone resort. Some products, however, are starting to open themselves up in much more interesting and potentially useful ways -- a simple example is the increasingly widespread use of RSS "feeds" (a basic type of XML) to provide at least a subset of available information purely as structured data. Some products are making use of so-called "XML gateways" (often referring to XMLized versions of the Z39.50 search protocol, called "[SRU](#)" or "SRW"¹⁵) to provide a standardized access path to more complex and/or more complete sets of structured data. OAI's "Protocol for Metadata Harvesting" (OAI-PMH) is yet another example of the various moves currently underway to address this issue of isolated data islands (or "silos", to mix in a more common metaphor).

But all of these methods are only the beginning of a much more far-reaching series of developments across the network to separate data from presentation, enabling various data sources to be "plugged into" an enriched interface, or various interfaces to overlay the same pure data. Certainly there are problems with this that remain to be solved, not the least of them being the financial or business model that supports it. But there are also some powerful economic and social forces advancing it, since the increase in data flexibility it provides makes the data that much more usable and hence more economically appealing. Such developments may have particular relevance to the processes of scholarly communication, as they may lead to the decomposition of traditional packaging (e.g., the academic journal) in favour of more easily harvestable and sharable packets of multi-media information. For libraries, in any case, it's precisely this kind of flexibility that will enable the development of such facilities as the "personal information appliance", or the decomposable, diffusible set of resources, services, and functions mentioned above -- that will enable, in fact, the full development of the nodal library as such.

Where are we now?

Some promising signs

With some ideas about where libraries in general need to be, given the changes underway in the information landscape, it's time to look, in comparison, at where UBC Library in particular currently is. New elibrary positions have been created (e.g., a digital-initiatives librarian, an eresources librarian), new elearning collaborations initiated (e.g., the MEDICOL program), new virtual reference services launched (e.g., the provincial post-secondary consortium "AskAway" service), and new products pioneered (e.g., the OpenURL linkserver, SFX). Without doubt, we've made some significant changes, and are in the process of making more -- let's look a little more closely at three in particular:

The "Transition to Online Journals"¹⁶ project, for example, has successfully moved the university community as a whole away from redundant and costly journal print subscriptions and toward reliance upon licenced access to electronic versions for thousands of titles, using the savings to purchase more access to both ejournals and

other network resources. Some care has been taken in this process to obtain reasonable assurance that such access is sustainable both for current and for archived issues before cancelling print¹⁷, but such a project reflects a clear decision to enter the world of network information and to let go of print.

UBC Library has also gotten extensively involved in [a number of digitization projects](#)¹⁸, including, recently, a collaboration with the Faculty of Graduate Studies on an eTheses project that makes use of the DSpace institutional repository. As with most other academic libraries, these projects have grown up over time, and very often undertaken with grant funds attached to a particular purpose, so it's not unexpected that they would exhibit a variety of tools, strategies, navigation and interface designs, but in their cumulative and developing variety, number, and volume of data, they represent an increasingly impressive contribution to network-accessible information.

The Library has also been involved from an early stage of the Web phenomenon in developing a functional infrastructure capable of dynamically generating pages that can knit together many of the resources and services it offers in a highly configurable interface. This uses a general, though proprietary, middleware tool called ColdFusion that delivers database contents to web pages in an easily modifiable manner, and also allows those databases to be maintained in a distributed manner through user-friendly, web-based forms. These processes too, of course, have become quite diverse over time, and now need rationalization, but the relative ease and flexibility which such a tool provides for the management of both information and interface makes it, or something like it, clearly essential to the operation of the library as network node.

Some less promising signs

Despite these signs that UBC Library is accommodating the changes in the information landscape well, however, there are a number of indications of deeper problems. The website as a whole, for example, remains a largely static, and rather sprawling assemblage of pages, some generated, but many hand-crafted, difficult to change or tailor to need. Digital collections, while impressive in their variety, remain largely dispersed initiatives lacking an overall plan or purpose. The tendency to purchase off-the-shelf software products as a means of quickly filling a need or a want has left us with a patchwork of proprietary systems that overlap, leave gaps, resist communication with other systems both within and without the Library, and present the user with that bewildering variety of interfaces. And looming over all such systems, consuming more resources than all the rest combined, is the very epitome of the isolated data silo, the ironically named "Integrated Library System", with its rigid and specialized database, the OPAC.

This last situation, in fact, may lie at the heart of many of the problems libraries in general continue to face in adjusting to the network society. The great cost of the ILS that serves the traditional organizational units of the library -- acquisitions, cataloguing, circulation -- constitutes in itself a kind of justification, conscious or not, for trying to cling to that organization, and indeed for trying to mold network resources, services, and functions to fit into that traditional structure, however inadequately or inefficiently. Understandable as this might be, given the investment in such a system, it's difficult not to see it as a kind of wag-the-dog effect, whereby the tool determines the services rather than the services determining the tool(s). And the result is that the functions of the library seen as primarily a physical

repository continue to dominate it both organizationally and operationally, forcing network or nodal functions into separate organizational domains that might otherwise gain considerable scope and synergy by being brought together, and producing the general lack of coherence in network services noted above.

Some good practices

The fundamental problem of a legacy organizational structure existing in a co-dependent relationship with a large and expensive supporting technological system, all centred around a database designed to serve a physical collection, is something that afflicts most libraries of any kind at present. But, in addition to recognizing our own efforts to escape the limitations of that situation, it's both interesting and helpful to look at some of the initiatives and innovations at other institutions that are helping to break this mold.

- Coherent, consistent interface and resource management:
 - see the University of Toronto Library: [using Plone](#)¹⁹ as a Content Management System, ColdFusion to mediate [all electronic resources](#)²⁰
 - see the [University of Rochester Library](#)²¹: ColdFusion as both CMS and eresource database
- Open OPAC (search results as RSS feed):
 - here's a [sample RSS feed](#)²² from the Ann Arbor District Library's OPAC
- Unified search interface:
 - see [University of Pittsburg Library](#)'s "ZOOM"²³
- Information appliance:
 - see University of Minnesota Library's "[My Field](#)"²⁴
- Library as publisher:
 - see Columbia's "[epic](#)" project²⁵

How do we get from here to there?

With a bold approach to strategy

The options for getting from here to there obviously depend upon where we consider "there" to be. And for that, we'll need to face and make a strategic decision. If we want to continue to think of the library as an institution defined primarily in terms of its "collection", then we'll no doubt continue to tinker with network services around the edges, so to speak -- experimenting with "social software", adding new digitization initiatives, perhaps even installing a "Content Management System" for the website, but not undertaking any more fundamental organizational or other strategic moves that might transform the services the library provides, or alter the role of the library as such. If, on the other hand, we're willing to reconceive the library primarily in terms of its role in an information network, providing services to and from its local community/ies, then we'll need to re-think its organization to optimize that role, and develop general strategies for achieving it. We'll need to decide, in other words, and in a famous formulation, what business we're in -- the collection business or the information business. The former choice is clearly the more conservative, and might appear the more prudent. But in times of rapid change, especially, the conservative choice is not often the safer -- the adage that fortune favours the bold becomes particularly pertinent.

With an exploratory approach to implementation

The same environment of rapid change that rewards a bold *strategy*, however, will usually also require a more exploratory, experimental approach to *tactics* or implementation. It's inevitable in such a time that some ventures will turn out to be blind alleys, some will be superceded by events or new possibilities, some will simply turn out to have been yesterday's fad or buzzword. We'll need to be both willing and eager to *try* new approaches, systems, products, etc., and at the same time critical in our assessment of them.

The cardinal virtue, as we move forward, then, is flexibility -- first and foremost in our human resources, where people will need to be able to relocate, retrain, and redefine themselves much more easily than they can at present. Structures put in place to protect people working under more static conditions often become just bureaucratic glue under more dynamic ones, disabling the organization's ability to respond to change, and frequently demoralizing working people themselves. Freeing people from these overly rigid job definitions, change processes, etc. can result in a win for all concerned, and achieving this will need to be worked out with the various associations and unions involved. Whether through such more or less formalized processes as "Organizational Development"²⁶, or simply through its own focused efforts, the objective is to embed the ideas of change and continuous learning into the library's culture and organization.

A flexible approach to the implementation of systems and products is also important. There may be a natural tendency to want to encourage "buy-in" to a particular new approach, both with our users and with our staff, by extolling its virtues and minimizing its costs, weaknesses, or trade-offs. But such a tactic can increase the risk for new, untried initiatives, since it undermines our credibility if and when unexpected difficulties arise -- better to appeal to the critical intelligence of our staff, and the good will of our users, by presenting the project as a trial and setting expectations accordingly.

Two other aspects of an exploratory or experimental approach to project/product implementation might be suggested, here, even though they may appear obvious:

- before deciding on a particular solution, however experimental, it would be good to consider carefully the downside and "exit strategy" should it not work as hoped; that is, a solution that requires less of an institutional commitment, or that allows more of that commitment -- e.g., in terms of salvageable content, or transferable knowledge -- to be saved or re-used, is preferable (other things being equal) to one that commits us more heavily;
- and, in addition to evaluation of alternatives *prior* to implementation, it would be useful to plan beforehand how we might build in *ongoing* monitoring and measurement of the effectiveness of the selected option, as compared to explicit project objectives.

With some concrete steps

Some plausible, if very broad, and very sketchy objectives, roughly in order of the time frames likely required to realize them:

- Short term (< 1 year):

- Re-examine the current array of products, collections, and services, with a view to making them as consistent, interoperable, comprehensive, and open as possible
- Medium term (1 - 3 years):
 - Develop the network infrastructure necessary to bring together the products, services, resources, instruction, etc. -- including the OPAC - into a seamless and flexible user interface
- Long term (> 3 years):
 - Restructure the library organization to reflect the functional needs of a networked library rather than that of a physical collection
 - Develop the external network links that will tie local libraries together as interoperable network nodes, providing comprehensive information services at all levels of society

Obviously, these are too brief to be anything more than mere suggestions, and leave entirely open all issues of implementation -- in fact, all of them can and should be turned into questions by prefixing them with the phrase "How do we...". But, that said, any movement along the directions such objectives suggest would be positive steps toward realizing the nodal library.

Conclusion: Constructing the Future

Finally, of course, we'll have to do more than just "envision" the future -- we have to start building it. And this can be hard, for anyone, any group, or any institution, especially in a time of disruptive change, in which embracing the future often requires relinquishing much of the past. For libraries in particular, this need to let go is what makes the embrace of the future all the more difficult -- quite apart from the status libraries have long rightly enjoyed as collectors and preservers of the cultural inheritance of human civilization, their more recent past is one of remarkable achievement, in cross-cultural descriptive standards, universal classification schemes, the development and maintenance of controlled vocabularies, and of course in the early use of automated systems on an enterprise level. To say now that much of that achievement applies primarily to the collection of physical items, and that such a collection should no longer be seen as at the centre of the library as an institution is for many, to say the least, a wrench.

And this wrench often manifests itself in an entirely understandable resistance to change -- not often in explicit terms, but often enough in the subtler forms of an underlying anxiety and a threatened defensiveness. Within this mindset, for example, Google and Amazon are seen not as amazing information tools and aids that can be *used* by libraries, but instead as competitors from which we must try, though without much hope, to lure people away. Rather than viewing the catalogue as simply one database among many, and focusing it on what it was designed for, we're led to throw more "things" into it, with the idea that maybe this will keep it "relevant" and entice more people to use it. We want, with a certain pathos, to "keep up" and be "with it", but at the same time cling to all of the things we believe have defined us in the past. And we sometimes tend, almost truculently, to think that there's basically something wrong with our users, which might be fixable with the proper instruction, if only we could reach them all.

Now, admittedly, this is a bit of a caricature, of what we might call the Defensive Librarian Mindset (or "DLM") -- not many actual librarians are pure examples of it, most of us are affected by it to some extent, and some elements of it may be more or less rational in any case. It's a real enough condition, though, that it constitutes, in itself, a significant problem, and quite possibly a crucial problem -- it would be a painful irony if the one factor that might *really* threaten the future of the library were the defensive, reactive posture of too many of its professionals.

Fortunately, signs are widespread that this posture is waning (see "Some good practices" above). Increasingly, librarians are realizing that, as information professionals in the very Age of Information, our role goes much beyond just "keeping up" -- our role becomes "showing the way". And in showing or leading the way (in company, it must be said, with partners and collaborators in other professions and institutions), we not only transform the library into an information facility at the heart of the Information Society, we also preserve and enhance both the cultural status and enduring achievements of the library as an institution. Rather than being the victim of change, the library becomes the maker of change.

¹ See Tim O'Reilly, "What is Web 2.0?", O'Reilly website, Sep 30/05:

<http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>

² An aspect, perhaps, of the phenomenon discussed by James Surowiecki in *The Wisdom of Crowds*, New York: Doubleday, 2004

³ See Maureen Pennock, "Curating e-Science Data", *Digital Curation Centre*, Aug 25/06: <http://www.dcc.ac.uk/resource/briefing-papers/curating-e-science-data/>

⁴ See Michael Fraser, "The Place of the Digital Library within Virtual Research Environments", in *Digital Libraries a la Carte: New Choices for the Future*, Research Technology Service, Oxford University Computing Services, Aug/06:

http://users.ox.ac.uk/~mikef/rtts/ticer/fraser_diglib_vre_24Aug06-online.pdf; see also "Data webs: new visions for research data on the Web", A *Research Information Network* workshop, Jun 28/06: <http://www.rin.ac.uk/data-webs>

⁵ A note on "local": the term here refers to any appropriate locality for a given library: its institution, its community(/ies), its region, its nation, etc. The "local community" for a large research library, for example, may involve not just its campus, but also its province, state, or national region, which might otherwise go unserved.

Note that the idea of locality has become if anything even more important in a network context since the value of the network is in many ways a function of the degree to which each node provides service to and from its appropriate community - a somewhat counterintuitive consequence that may well result in reduced autonomy for the institutions involved.

⁶ <http://www.oclc.org/productworks/urlresolver.htm>

⁷ <http://ocoins.info/>

⁸ <http://del.icio.us/>

⁹ <http://www.librarything.com/>

¹⁰ See highWire Press, <http://highwire.stanford.edu/>

¹¹ See the University of Michigan Library Scholarly Publishing Office, <http://spo.umdl.umich.edu/>

¹² See CDL "eScholarship editions", <http://content.cdlib.org/escholarship/>

¹³ Wendy Pradt Lougee, *Diffuse Libraries: Emergent Roles for the Research Library in the Digital Age*. Council on Library and Information Resources, "Perspectives on the Evolving Library Series": <http://www.clir.org/pubs/reports/pub108/contents.html>

¹⁴ Lorcan Dempsey, "Discover, locate, ... vertical and horizontal integration", *Lorcan Dempsey's Weblog*, Nov 20, 2005: <http://orweblog.oclc.org/archives/000865.html>

¹⁵ <http://orweblog.oclc.org/archives/000865.html>

¹⁶ http://www.library.ubc.ca/collections/transition_online2006/

¹⁷ Libraries have dealt with this issue in a number of ways, such as negotiating perpetual access clauses in licenses, putting pressure on vendors and publishers to consider the issue, and instigating new consortiums such as Portico (see <http://www.portico.org>) and LOCKSS (see <http://www.lockss.org>) that offer services which provide a permanent archive for electronic scholarly journals. As well, publishers are increasingly partnering with libraries to build harvestable information repositories to store and archive content and licensing information.

See "Urgent Action Needed to Preserve Scholarly Electronic Journals," Digital Library Federation (DLF), viewed at <http://www.diglib.org/pubs/waters051015.htm> on August 27, 2006. See also "Update on TRANSFER Activities," United Kingdom Serials Group (UKSG), viewed at <http://www.uksg.org/transfer.asp> on August 27, 2006.

¹⁸ <http://www.library.ubc.ca/archives/digicollections.html>

¹⁹ <http://main.library.utoronto.ca/>

²⁰ <http://main.library.utoronto.ca/eir/resources.cfm>

²¹ <http://www.lib.rochester.edu/>

²²

<http://www.aadl.org/cat/seek/search/X?moby%20dick&searchscope=26&m=&SORT=D&topformsub=1&rss=1>

²³ <http://www.library.pitt.edu/>

²⁴ <http://www.lib.umn.edu/san/mellon/index.phtml>

²⁵ <http://www.epic.columbia.edu/>

²⁶ See Karen Holloway, "The Significance of Organizational Development in Academic Research Libraries", *Library Trends*, Summer 2004: http://findarticles.com/p/articles/mi_m1387/is_1_53/ai_n8640802