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The Iceberg Problem -- Is the Investment in Our Collections Visible to Patrons?

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Something Ventured ... from page 26

posed "Education Librarian" position was clearly not going to happen, so we had to come up with a way to address the needs of our EdD students and beef up our collection using existing personnel. At the very beginning of the fall semester, the library assembled a team of librarians possessing expertise in a variety of functional areas who could work effectively with each other and with **Dr. Beyard**. The team was composed of the Head of Acquisitions, the Head of Collection Development, the Digital Resources Librarian (who is also a Reference Librarian) and the Systems Librarian. Working closely with **Dr. Beyard**, the team developed a plan of action that would allow us to intelligently and quickly spend this year's allotment before it was again redirected towards something like refinishing the University's planetarium ceiling.

Our first job was to identify collection strengths and weakness in three areas. First, we did a comprehensive review of our serials holdings. This endeavor resulted in our determining that the current collection of Education and interdisciplinary journals was excellent and would easily support research at the doctoral level. We then proceeded to review our monograph collection. This review revealed two major problems. First, we needed to weed some antiquated material (a.k.a. old, useless, sometimes embarrassing junk) and replace it with newer editions and more current publications. In addition, the monograph collection was determined to be severely lacking in titles that dealt with research methodology and in works published by core publishers of scholarly treatises in the field. We then began to take a hard look at our online resources. We already knew that our online journal collection easily supported research at the doctoral level. We proceeded to review the specialty database holdings of peer institutions offering an EdD. We discovered two conspicuous omissions in our holdings that we would have to purchase.

Our next task was to address the ongoing selection of monographs needed to support the program. The Collection Development Librarian worked closely with the EdD Program Director to develop a separate selection profile for the EdD program. **Central Connecticut State University** uses **Blackwell** as its primary vendor and uses their online subject profiling and new title notification system, Collection Manager. The profile was developed using the existing Educational Leadership selection profile and fine-tuned to meet the needs of doctoral level selection. Additional subject areas were added to the profile and certain publications were dropped. In addition, the Program Director was given access to the online use of Collection Manager so that she could directly request titles for purchase. To date, she is the only non-Librarian on campus who is accorded this privilege.

We then proceeded to set up trials to those specialty databases that peer institutions had that we did not. Input was solicited from the entire **University** including the EdD cohort. Database content was compared with the content of those

to which we already subscribed to ensure that we would not be duplicating, to any significant degree, content that we currently owned. An enormous amount of "comparison shopping" was done to obtain the best pricing for the databases, including investigation of consortia, direct orders from publishers, and vendors in every combination and permutation of simultaneous user. Having determined that the specialty databases were indeed valuable additions to the program, as well as of benefit to the entire University community, we bought them. By the end of year two, the EdD program had funded the purchase of more than 700 scholarly monographs and had added significantly to the online research capabilities at the **University**.

Well, we're in year three now and so far we could call it the "Clear sailing/Pragmatic" year. Both the Collection Development Librarian and the EdD Program Director have reported that the EdD Selection profile is working famously. A new liaison librarian has been assigned to Program Director. Databases are meeting research needs and trials for potential new database additions have already been scheduled. The working relationship between the EdD Program Director is streamlined and efficient. In fact the University's July 2004 report to the Connecticut Department of Higher Education and the Board of Governors for Higher Education touts significant improvements to library support of the new EdD program.

The thrust of our efforts during this last year

of supplemental funding will be towards developing a plan for maintaining our progress and continuing to add essential resources as needed. The current state of our regular acquisitions budget precludes any hope of being able to absorb the ongoing costs of the already existing EdD materials, not to mention further collection development. We need to develop a plan that will ensure continued funding for resources that are now considered essential or core and to which our patrons have grown accustomed. We plan to produce a detailed and comprehensive report that will explain what each new database is, what it does, its current usage statistics, and its cost. The report will be finished by the beginning of the spring semester and the Library Director will distribute it to the **Connecticut State University** central office, the **CCSU** administration, and the **CCSU Council of Deans**. We will also establish a system of planned communication with the faculty in the EdD Department and others on campus who have benefited directly from access to the new online resources. We will explain the issue in detail and urge them to lobby for renewed funding for the library. We plan a no holds barred approach to this endeavor and, should our efforts result in no new funding, it most certainly won't be because those with the power to allocate funds did not have all the information needed to make a well informed decision.

Being the optimistic glass is half full kind of librarians that we are, we think we'll be able to call year four "Hope springs eternal."

The Iceberg Problem — Is the Investment in Our Collections Visible to Patrons?

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"For every complex problem, there is a solution that is simple, neat, and wrong"

— **H. L. Mencken**

A collection is a potential, a discovery waiting to happen. Since digital collections are only accessible through their user interfaces, the role of the user interface as a facilitator of discovery cannot be underestimated. It appears, however, that while academic electronic collections have grown exponentially—and often as a result of significant institutional investment, the utilization rates for many of these collections remain lower than expected. Computers and broadband networks are ubiquitous, patrons are computer savvy, and researchers are excited about the potential of electronic resources—what then stands in the way of greater utilization of electronic scholarly collections?

Driven by substantial industry investment, significant advances in e-commerce over the last few years dramatically changed users' expectations for usability and quick gratification during online sessions. Many libraries, on the other hand, are facing shrinking budgets and diminishing resources just as the rising popularity of commercial research tools makes the success of academic collections increasingly contingent on enabling quick and easy access to the wealth of resources they offer. For collection developers, this situation suggests the need to take a closer look at the user interfaces that provide access to their collections.

continued on page 30

Of Icebergs and Penguins

Icebergs are a good metaphor for the relationship between collections and the user interface. Like icebergs, most collections are largely invisible. The user interface, or the tip of the iceberg, does not reflect the actual scope or depth of the submerged mass. Some collection portals attempt to attract patrons by using gimmicky interface designs intended to create a contemporary look—these are the penguins of our metaphor. Still, server log analyses, used like the underwater equipment necessary to explore the submerged mass, often reveal that only a small chunk of the collection is ever used. Analyses of inter-library loan requests support the frustrating realization that patrons remain unaware of much of the content available in the collection.

The iceberg problem can be framed as follows: What can be done to facilitate interaction patterns that help patrons realize the discovery potential of the available electronic resources and, by extension, justify current and future investment in the collection? I believe that the answer is in the user interface. In what follows, I would like further to explore the conceptual and strategic relationship between the user interface and collection utilization.

Utilization, along with usability and accessibility, are no longer the obscure jargon of narrowly technical discussions. Increasingly these terms permeate the electronic resources discourse. Yet the topics they represent often remain only loosely connected to the efforts of many collection developers. This is understandable given the traditional separation between content and containers, or the collection and the technology that makes it available. Organizational structures often reflect and reinforce the boundaries between content and technology, making it difficult to establish effective communication between decision makers on both sides. The resulting disconnect between the visible and submerged parts of the collection "iceberg" can lead, not only to decreased utilization, but also and more problematically, to an inversion in the relationship between collection development and improved usability and accessibility.

Connecting Tip and Base

Collection developers often conceptualize the value of their collection for patrons in terms of quality and scope. From this perspective, the collection development process tends to focus on uniqueness and growth. To achieve uniqueness, collection developers use their domain expertise to guide the direction of further investment in subscriptions and other electronic resources with the intention of creating collections that are unique in quality and strength. Growth is related to richness and wealth of content concentration—two central factors in making any collection authoritative and influential in its particular domain. The centrality of growth (whether highly focused, widely inclusive, or both) as a means to increase the appeal of the collection is further highlighted by the unprecedented availability of new content and an apparently matching increase in demand. Uniqueness and growth are inherent in the mission of collections and constitute key motivators for collection developers.

Yet despite being key attributes of collection development, uniqueness and growth become problematic when considered from the perspective of the delivery and consumption medium for electronic collections—the Web. To

explain this point, I will first examine the role of growth using the concept of "zero sum gains", which I borrow from economics. Zero sum gains means that in some circumstances, the value of continued investment can diminish to the point of becoming meaningless. With billions of pages indexed on various search engines, the Web is a medium to which the concept of zero sum gains clearly applies—especially from the perspective of the end-user. Growth is meaningful only if the end-user realizes that an increasingly large number of resources is available in the collection. Consequently, it is quite possible to invest in the growth of a collection without attaining a comparable expansion of its utilization.

Uniqueness too is a complicated construct given the pace at which competing alternatives emerge on the Web. The co-modification of information on the Web inevitably implies susceptibility to high substitution rates. In other words, the cost of switching from one Website to another is minimal to the end-user. To understand how the low cost of switching affects the relationship between uniqueness, investment and utilization, let us contrast electronic collections with brick and mortar ones.

In traditional museums or special libraries, we can see uniqueness in action. For example, the availability of a Vermeer masterpiece in a certain museum makes that institution a unique destination for Vermeer fans and scholars. Yet

the availability of a digital impression of the same Vermeer masterpiece in numerous digital collections does not make any of them a unique destination. On the contrary, each of these collections runs the risk of becoming interchangeable with all the others.

I am not suggesting that considerations of utilization, accessibility, and usability displace uniqueness and growth as guiding concepts and motivating principles in the process of collection development. Rather I would like to integrate the two perspectives represented by these concepts. Much like the two differently positioned, but, nonetheless, inseparable parts of the iceberg, a scholarly electronic collection and its user interface constitute a single entity. In the remainder of this article I will consider how we can implement an integrative framework—one that can facilitate a dynamic interaction between the development of content and user interface—in the discourse on electronic collections. I propose that we begin with a closer look at the patron, or the *user* in the user interface construct.

Know Thy Patron

Classifying users too generically is a mistake I initially made when I became director of interface design for some of the industry's most sophisticated products. At that time, I came up with "GRUF scenarios", scenarios for Graduate students, Research assistants, Undergraduates and Faculty. I assigned broadly construed attributes to each of these patron groups. For example, undergraduates were designated—based more on media portrayals than empiric examination—as logging onto the system at midnight, after an evening of partying, and in desperate need of finishing a term paper by eight a.m. The tendency to pigeonhole the needs of patrons is similar to the inclination to make assumptions that classify patron groups by level of sophistication in system use or familiarity with approaches to research and use of advanced search features.

GRUF scenarios are currently widespread in our field, but they do not capture the relationship between patrons and the unique characteristics of Websites nor do they adequately explain the process of interaction with Websites. The Web browser frames a homogenous interaction pattern as patrons continuously link from one site to another, and the overall experience is more like surfing TV channels than using software. In this context, *who* the patron is no longer defines the search process. Whether she is an undergraduate novice or an experienced scholar, the proprietary relationship between patron and resource, which can be seen as unique and external to the Web, has been transformed into an interaction that is inherently Web-based and shaped by the navigation process.

I revisit common patron-classification patterns in order to suggest a shift from focusing on irrelevant assumptions about patrons and their motivations to an analysis of action-driving attributes. The task, rather than the individual, is at the center of this approach, and our concern should be with task parameters, such as prioritization, complexity, frequency, and vocabulary. A detailed discussion of the scenario building (or use case) methodology suggested by this analysis is beyond the scope of this article.

continued on page 31

The Iceberg Problem from page 30

Nonetheless, it is clear that a more precise perspective on patron-collection interaction is needed.

Seek and You Shall Find

There is mounting pressure on everyone involved in the development of user interfaces for library portals to replicate the interaction models employed by commercial portals and search engines. Aiming to increase patron traffic and resource utilization rates, this approach seems to make sense and match patrons' feedback. However, a closer analysis of the strategic goals and interaction patterns that drive the user interface in the business and commercial domains reveals that effective user interface design for scholarly collections requires a different approach.

The guiding strategic motivation in the user interfaces of commercial portals and search engines is to facilitate action, or more specifically, transaction. The faster a user can transition from typing a query into a search field to typing a number in a credit card field, the happier are both customer and business. Not surprisingly, "Seek and you shall find" has been the catchphrase of successful search engine vendors (viz: Google's public offering in 2004). This maxim encapsulates the main thrust of successful interaction within the commercial domain: task A (seek) directly leads to outcome B (find). This interaction model is vectorial—its directionality is governed by the wish to achieve a single outcome.

Based on the vectorial interaction model, successful commercial search engines eliminate the vast landscape of the Web by providing patrons with a relevant result to their search query quickly—on the first results screen and often in the top record. The fact that these search engines simultaneously provide an entirely unusable result-set of hundreds of thousands of records further emphasizes the underlying goal of providing the single relevant match for the search. Given a result-set of workable dimensions (e.g., 25 links), the user would have been likely to explore it, but the paradoxical combination of results presented by the commercial search engines does not offer the user real choices. Rather, it conditions the user to view the action of searching and its outcome as inseparable, providing an instantly gratifying experience packaged as a volitional choice process.

Different from the "Seek and you shall find" vectorial model, is a model of user-collection interaction characterized by the phrase "Seek so you can find". Here, the relationship between task A (seek) and task B (find) is more reciprocal and dynamic. It suggests a spiral interaction model in which the outcome emerges as a synthesis enabled by the search process. Whereas the vectorial interaction model works well for commercial search engines, I believe that the spiral interaction model is more appropriate for the academic and scholarly domains.

Commercial search engines help users find a needle in a haystack—and this has never been easier. Google's ability is amazing even to those who understand its underlying technology. Nonetheless, finding a needle in a haystack (vectorial model) is not, in fact, such a big deal when you have the right equipment—a magnet in the case of this analogy. Only the needle attaches to the magnet while the haystack becomes immaterial. Most research and academic electronic collections, on the other hand, are serving patrons who are interested in finding a piece of hay in the haystack (spiral model). The magnet becomes useless; the key functions of assigning relevancy and ranking of information become dependent on human capacities such as critical evaluation, synthesis, and decision making.

New Ideas Long Forgotten

In his book *The Memory Palace of Matteo Ricci*, Jonathan Spence¹ describes a memory system devised by a 16th century Italian Jesuit priest. Matteo Ricci's goal was to find a way to store in one's head the sum of all human knowledge, so he suggested the following idea: Depending on how much one wants to remember, one can build in one's head virtual urban centers of various sizes. These imaginary cities should be complete with fully furnished palaces, homes, public meeting places and so on. Each one of these imagined spaces would serve as a memory location to reference a piece of knowledge. It would be possible "to walk" through this vast mental construct to access this or other items or bits of information. Five centuries later, I find Matteo Ricci's idea fantastically intriguing and completely relevant to the discussion about the relationship between patrons, scholarly collections, and user interfaces.

It is entirely possible that the key to greater utilization of electronic resources may be in

user interfaces that support the spiral interaction model by allowing dynamic visualization of information and enabling presentation that supports both near and associated contextualization. Consider, for example, the following common problem, which was aptly illustrated by Judy Luther, an industry veteran,

Endnotes

1. J. D. Spence, *The memory palace of Matteo Ricci* (New York: Penguin Books, 1984).
2. *Visible Content...Transparent Libraries*, Presented by Judy Luther on November 5, 2004 at the Charleston Conference, 2004. Sited here by permission of the author. Judy Luther is an industry consultant, author, speaker and futurist with 35 years experience as a librarian, publisher, vendor and information consumer.
3. *The University of Rochester Results Navigator*, Presented by Stanley Wilder on November 5, 2004 at the Charleston Conference, 2004. Sited here by permission of the author. Stanley Wilder is Associate Dean, University of Rochester Libraries.

in a recent panel discussion on emerging visualization tools. According to Luther, patrons often comment that they "have found all these other books on the shelf that weren't in the catalog," but could not "find the book that was (in the catalog)". "I guess the catalog was wrong," is a common conclusion.² These comments underscore the significance of contextualization. They also highlight the weakness of vectorial interaction with scholarly electronic resources, in which pinpointed searches eliminate the context of knowledge—a context that can be accessible in a memory palace or through familiarity with the library stacks.

Some current attempts to develop user interfaces that provide better support for interaction with and synthesis of vast amounts of information are beginning to tackle the issues raised in this article. These efforts focus on creating highly visual and interactive presentations of data-sets. Their user interfaces relate clusters of shapes in various sizes and colors to subjects of knowledge within a discipline or across disciplines. While the results of this approach to interface design can be esthetically appealing and entertaining, some fundamental issues remain unresolved, including productivity and accessibility for visually impaired patrons.

Other directions are suggested by grass-root efforts originating in institutions that attempt to find local solutions to the iceberg problem of utilization, accessibility, and usability. An excellent example is the **Results Navigator** developed in **University of Rochester** and recently described by Stanley Wilder as an "open-source interface for managing diverse metadata." Instead of the literal approach to visualization presented above, this tool enables contextualization of information by implementing FRBR, a cataloging protocol that "reveals relationships among works that would otherwise not be possible. For example, a search for Shakespeare and *Tempest* would return sites grouped into editions of the play, criticism about it, films, opera, and so on."³

Conclusion

Icebergs dissolve over time—their size diminishes until they finally melt away—and so will the iceberg problem discussed here. Collections will become highly visible through the implementation of user interfaces that would be

continued on page 32

[Illustration 2]

Books and The Internet: Buying, Selling and Libraries

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It is no secret that the advent of the Internet has brought numerous opportunities and challenges to all involved in the creation and maintenance of library collections — publishers, purveyors of the materials that libraries collect and librarians themselves.

At the **2004 Charleston Conference**, one discussion focused on a single aspect of this immense topic — buying and selling printed books over the Internet. Five panelists (two booksellers, one publisher and two librarians) presented their views of this phenomenon. Understandably, all noted that the Internet had caused changes in their work and all cited both pros and cons. No doubt other publishers, booksellers and librarians would have more to add to the discussion, but this group raised points that seem generally applicable.

The panel consisted of **Rhonda Herman**, Executive Vice President, **McFarland & Company**, Publishers; **Bill Kane**, Regional Sales Manager, **Alibris**; **Brian Buckley**, Vice President, Professional Sales & Marketing, **Barnes & Noble**; **Sherman Hayes**, University Librarian, **William Madison Randall Library, UNC Wilmington**; and **Nancy Gibbs**, Head, Acquisitions Dept., **Duke University**. According to **Herman**, publishers find the Internet a useful marketing tool and frequently send notices of new publications to librarians via email. Some provide their catalogs on the Web and/or in PDF format. In terms of actual sales, publishers continue to view vendors as the source of services that libraries want but publishers cannot reasonably provide such as approval plans and cataloging. There has been a long-standing and successful culture created in which vendors and publishers each have a role to play and neither benefits from undercutting the other. At the same time, publishers have increasingly provided means for libraries to purchase materials directly from them over the Internet, largely because of customer demand.

For publishers, this is a two-edged sword. Given the ubiquity of the Internet, there is an expectation that every publisher will have a Web presence and permit a user-friendly interface.

This is an added expense and a new area of endeavor. The publisher also must pay credit card fees and manage far more accounts with different entities. It may not be possible to track library orders separately from orders placed by individuals. On the upside, publishers receive payment more quickly and they are in more direct contact with at least part of their markets. Libraries have the benefit of being able to check availability in several sources. A book that might be out of stock at a vendor may be available from the publisher.

Booksellers such as **Barnes and Noble** and **Alibris**, which were not traditional library book vendors, also have learned to deal with the library market, the former as a bricks and mortar bookstore that expanded onto the Internet and the latter as an Internet only bookseller. **Buckley**, of **Barnes and Noble**, noted that in ten years, online consumer book sales have grown to \$3.4 billion. Libraries have followed suit and booksellers have learned to cater to their needs, offering competitive prices, large selection, purchase order accounts and fast, often free, delivery. He also pointed out that more and more public librarians use consumer Websites in collection development activities, reviewing prices, sales rankings and bibliographic information. That clearly extends to reviews and commentary as well. Libraries have continued to increase their use of online booksellers, especially for "rush" and hard-to-find items. Libraries enjoy the benefit of a large selection, good prices and speed. **Barnes and Noble** is even investigating additional library services such as processing, cataloging, standing orders and integration with ILS vendors. If this progresses, lines will blur further between what librarians like to call "traditional" book vendors and consumer stores such as **Barnes & Noble**.

Kane, of **Alibris**, noted widespread expectations of speed among customers of all kinds in all kinds of markets. Libraries see this in their clientele and in turn expect it of booksellers. **Alibris**, selling only via the Internet and specializing in providing hard-to-find books and media, has found a market among libraries by

supplying many things

in small quantity to many customers. It

is not a high volume or a high profit business, but it fosters precisely the

kind of relationship that characterizes the Internet, where every customer receives equally high attention from the bookseller.

It is not only booksellers who have taken advantage of the possibilities of the Internet. In many ways, libraries have driven the development of Internet-based book selling, requesting many of the same kinds of services from Internet suppliers as they have long received from traditional library book sellers. One of the primary hurdles for libraries in the early days of the Internet was the necessity of purchasing by credit card rather than using a purchase order and receiving invoices tailored to their specific needs. This frustration has eased as some booksellers have established means of dealing with library purchase orders, and more and more libraries have been able to obtain credit cards for acquisitions use.

The Internet has proven to be every bit as much a wonderland for librarians seeking materials for collections as it has for the everyday shopper who can find just about anything he or she can imagine on the Internet with comparison shopping thrown in as well. Thus, locating and purchasing obscure, even rare, materials can be done at one's PC. For librarians comparison shopping covers more than price because availability and condition are also very important to libraries, as are speed of ordering and delivery.

Both **Gibbs** and **Hayes** spoke of the many advantages accruing to libraries from the ability to purchase materials online. Most libraries who have tried this purchase method are aware that there are both pros and cons. **Gibbs** noted that postage can be expensive, purchasing statistics are not provided, there are many more vendors to deal with and to set up in the ILS, and vendors may not keep their stock information up to date.

Probably most libraries do some online ordering, but I wonder how many have gone as far as **UNC Wilmington** where enthusiasm runs very high. It was clear from **Hayes'** comments that **UNC Wilmington** has shifted most of its acquisitions purchasing to the Internet. By purchasing fully 70% of books and media online using a credit card, **UNC Wilmington** has been able to reduce costs, save staff time and increase speed. They buy both used and new books online and have been able to find items for Special Collections that would never even have been identified just a few years ago. Many persons in the library, including the Director himself, use the credit card in this way. As **Hayes** put it, "The vendor doesn't care who you are if you have a credit card!" (I was reminded of the often quoted cartoon "No one knows you're a dog on the Internet.") **Hayes'** enthusiasm contrasted with the more conservative approach many libraries have taken toward online purchasing, and I think he has it right. His library's collection has benefited enormously, not just because the Internet exists, but because of the bold way in which **UNC Wilmington** has chosen to use it.

continued on page 34

The Iceberg Problem from page 31

developed with industry standards and metadata protocols. These interfaces will support interaction models that fit the unique requirements of their patrons for knowledge synthesis through interactive and accessible direct manipulation.

Attempts to develop such interfaces are on

the way, but workable solutions for this significant challenge may take some time to realize. In the meantime, collection developers should be aware of the inherent ties between the collection and its user interface and seek an active role in guiding the development and future direction of the user interfaces serving their collections. An investment in the tip of the iceberg now can save the entire collection from sinking into invisibility.