

My Job in 10 Years

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Confessions of a Science Librarian

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Title: Introduction

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Change is a constant. I've been an academic librarian for about 5 years now and I've seen things change quite a bit over that time period. Eresources have come to take on an all-encompassing role in our institutions. They've passed the tipping point from nice-to-have to only-thing-that-matters in that short period of time. Google has gone from a cute little niche search engine to the eight hundred pound gorilla. Yet, there are a lot of things we still seem to do the same old way -- we still buy an awful lot of books, the vast majority of our reference interactions are face to face, a not insignificant portion of most of our journal collections are still print + online or even (gasp) print only. This is obviously still a period of transition.

I think it's a useful exercise to try and imagine the future. If we think about where change will take us, try and anticipate the newness of the future, when it comes, we will be better prepared. It may not end up anything like we imagined, but at least we were prepared for something.

So, over the next little while I will try and imagine what my job will be like in 10 years. I'll be looking at reference, instruction, collections and scholarship in an academic science & engineering library.

Title: Reference

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Reference service is here to stay. It will always be a core mission of academic libraries to help our patrons find the information they need to do their work. However, I believe the nature of the questions we get and how we deliver the answers will change quite radically.

There are a couple of factors at play here. First of all, will our patrons continue to believe that we can help them with anything? Our patrons will become increasingly comfortable with online tools, online tools will become increasingly comprehensive and comprehensible. Currently, we often see at the reference desk that students' confidence in their abilities to find information on the web lags quite a bit behind their actual ability. Will this gap continue as search tools get better or will they truly be much more successful in their self-directed information seeking behaviors? In other words, will they continue to need us? Actually, I think (hope) the answer is yes. Resources will continue to multiply, single purpose tools won't be able to keep up, relevance ranking will continue to be imperfect, integration of functionality and information from various sources into coherent documents will be a challenge. Questions will be harder and more challenging, but there will be questions. At the service point, we will still be able to help students navigate and integrate. (I think we're seeing a lot of this already -- it will only accelerate.)

Next, the continued importance of libraries as places on campus (and really, the continued importance of campuses as places to attend university). To the extent that we are still valued as places on campus to work, study and socialize, [f2f](#) reference will continue to be an important service. Whether we provide that service behind a desk, from our offices, roaming around a commons area, consulting in a group study room or from remote locations around campus such as dorms or academic departments, the f2f service will continue to be valuable to our patrons. Will it be closer to a consultants' role than a quick answer service? Probably. But the value of sitting down with someone and talking out their problem will continue to play an important role.

Is f2f the only way to deliver reference service? Of course not. There are already several alternatives to f2f reference, with phone, email and now chat reference. Chat reference is still in its infancy, with wonky software and a mixed overall experience. It's still slow and clunky, commonly with reference interactions for the simplest things stretching over 30 minutes as you and the patron multitask. Some places are moving to simple IM. Assuming phone reference won't go away and email will largely wither away, is what we currently have as VR the future or is it a blind alley, an embarrassing

mistake that we'll all try and pretend didn't happen in 10 years. Probably both. What we currently offer will seem a bit misguided. But, the software will mature, browsers will become better able to handle the complex functionality and increased bandwidth will make video streaming possible. As online education becomes more popular, students will demand that online courses be richer and more varied than f2f courses, with better interaction on all levels with instructors and fellow students. Certainly interactions with research consultants (or whatever) can be part of that mix. Bizarrely, I can almost imagine that audio and video streaming technologies will make these online reference interactions strangely similar to sitting at the reference desk and having a student walk up with a question. You know, maybe with the way phone technology is maturing, phone reference and video reference will actually be the same thing too.

So, in 10 years, I will sit at a desk in a physical library and answer questions from patrons. I'll probably also roam around the library and perhaps have "office hours" some other place. Not any different than what is possible now. However, my virtual self will also be highly available in a variety of different ways which are not possible now. Are there any changes I can't currently imagine? I hope so.

Title: Reference -- a few more thoughts

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I was thinking. Maybe one of the things I couldn't imagine is a kind of reference wiki. Maybe my job will be to initiate and manage wiki-like things for our patrons to use. Maybe another of the things I couldn't imagine was using threaded discussion lists for reference interactions. No reason why either of those things couldn't be possible. How about blog-like things or other kinds of social software? I think I was also sort of assuming IM would get sucked up into another service platform and would not really be a unique service anymore, but I'm not sure that is what's going to happen. Maybe there are possibilities there too. It's always interesting to think about what you can't imagine.

Title: Collections

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I've divided this part into a few distinct areas: books, journals, databases and other. Databases and other are coming next.

Books. Will I still be buying anything in print in 10 years? It'll be close, but I think so. I'm pretty sure that the stuff I buy in the History and Philosophy of Science will still mostly be real monographs, intended to be read from start to finish. That stuff will certainly be still available in print format. I may buy dual format, print & online, but there will still be print versions. Technical manuals for operating systems and programming languages and the like will mostly be online only, the Safari and Books24x7 model taking over that particular niche.

Two models I like a lot that I think will become much more important in the book world are the new [Safari University](#) system where profs can cobble together course textbooks from a wide variety of existing content modules. The other model is the [Synthesis](#) model from [Morgan & Claypool](#), where we see medium length (ie 70-100 pages) essays on various topics in depth. This is what our students really need from us -- that kind of concentrated knowledge, that they can use to get up to speed on a particular topic fast. Getting that kind of concentrated dose will be a lot easier than pulling together information from a bunch of different web sources. The key to these two models is that print is secondary with online being the primary mode of delivery.

Who needs to read an 500 page book on classical mechanics or 20 books on signal processing? The real knowledge encapsulated in these books will be broken down, recombined and focused on specific needs. Break the 500 pages down into usable chunks, extract what's really interesting from the 20 different books to make one really good one -- the one fitted to a particular student's or course's needs. That's what I think I'll be buying for my scitech collection in 10 years. Reusable, interchangeable content pieces that can be really focused on both broad and niche topics. I think that these content objects will be increasingly visual and interactive, constantly updated, perhaps with blog- or wiki-like feedback loops. I think that's what the net generation will want from their scitech "books." What will happen to the 10s of thousands of books currently on our shelves? A lot of them will stay there, a lot will go into fast retrieval storage locations. Availability online (ie. via Google Print) will probably decide each book's fate. In 10 years, I'll probably only be buying a couple of hundred real print books per year, maybe even less.

Another model that I think will become dominant is the kind that Knoval has, a big

database of a lot of factual information, ie. chemistry and engineering tables. This data will still be very important for students and researchers to get quality information, but these kind of databases will make the most sense.

Journals. Will I be buying anything in print in 10 years? I suspect almost nothing. Perhaps I'll still get stuff like [Scientific American](#) and [Wired](#) in print because they're fun to flip through while sitting in the comfy chairs drinking a latte. As for scholarly publishing itself, looking into the crystal ball 10 years into the future is very murky. By then I suspect that virtually all journals will have abandoned the "issue" model and will be article-based. Probably many will be overlay journals, providing peer review services to articles in various eprint servers. For these, I'll pay a certain amount to cover the costs of peer review and the technical infrastructure for publishing and archiving. I imagine that the scholarly societies will be heavily into this model, somehow having figured out their business model for both publishing and non-publishing society activities. I'll still also pay more traditional subscription costs to the various commercial and society publishers, who I think will still be very active in 10 years. Those publishers will continue to publish their peer reviewed journals in 10 years from now. By that point, though, the net generation will start making their influence felt as scholars. I think that this will really begin the transformation of scholarly publishing in the 10 years after that.

The rise of blogs, wikis and other social software will start to have an important impact on scholarly publishing in the next 10 years. Important articles will start virtual conversations that will bounce back and forth. Conferences will probably see the same sort of transformations. While face-to-face networking will still be important, a lot of the true exchange of ideas will happen after the conference has ended. By then, we'll probably figure out a way for libraries to contribute to the infrastructure of this process, and that will be part of my job.

In conclusion, I think our biggest challenge in 10 years will be marketing to students the resources we do purchase -- convincing them that we have something to offer that beats what they can get for free online. It will have to be much better quality and at least as good convenience. Part of this challenge will even be getting any message in front of their eyeballs at all, getting some small piece of their attention. And I guess that leads into the Instruction section next.

Title: Further thoughts on books & journals

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I seem to be having a lot of further thoughts on these things....I hope all this isn't too tedious for my patient readers. It looks like all this is going way longer than I thought. In any case, there are a couple of things I wanted to elaborate on a bit more:

Open Access. This is a really tough area to prognosticate on, both in terms of where the OA movement will go in 10 years and in terms of how that evolution (revolution) will actually affect my job. No question, far more of the world's scholarly output will be available via scholar's home pages where they will self-archive their work. Also no question, institutional and discipline-based repositories will also pick up steam and make available an awful lot of the work that is being produced, both in terms of articles and other materials like presentations, datasets, media files, and whatever. I imagine that the commonly used search tools 10 years from now will pick all this self-archived/repositoried stuff up. I think my role in this process will be to facilitate and organize access to these repositories via the search tools as well as to facilitate and organize the scholars at my institution getting their stuff into the various repositories. Bringing this stuff together in a coherent way is where I see the role of overlay journals.

As for OA journals, they too will no doubt multiply. As for whether they will replace journals with a toll access, I doubt it, at least in the 10 year timeframe. I think the (inflation adjusted) overhead will be drastically lower than the \$500-\$1000 per article we see mentioned a lot these days, but someone will still have to pick up that cost. I think that there will still be a variety of business models around in 10 years, some author pay, some institution pay for author, some regular subscription journals, some where journals are hosted by institutions that pick up the tab. At the same time, I think the 10-15 year time frame will see a kind of tipping point. As the current generation of undergrads & grads become the senior researchers and administrators, their expectations will start to shape the academy more and more. The expectation that everything be free and instantly available will totally transform scholarly publishing, to the point that I don't think journals will even exist as we know them now. My role in all this? Mostly getting out of the way, riding the wave, facilitating the transformation and making sure faculty & students are on board and coping. Redirecting journal subscription funds to supporting various repositories and other OA-related initiatives. Support my institution's efforts at repositories & hosting.

Aggregated Content. One trend we are seeing quite a lot of will continue to

explode, and that's aggregated content, both in terms of ebooks and full text journal content. Already, companies like Books24x7 take the "drudgery" out of selecting individual book titles, with the idea that if you buy all the books they have, at least some of them will be the ones you need. The point being that it's somehow cheaper to choose everything for one (large) price than to pick and choose and only take the most relevant. It's interesting, because it goes against what we librarians hold dear: that we are qualified and professionally obliged to choose the best materials for our patrons out of a vast array of choices. If we can just choose everything, where's the skill in that? Of course, what do our patrons care when they find the thing they're looking for if it was skillfully chosen or included as part of a one-size-fits-all package. As long as there are books and journals to buy, publishers will market these massive content packages. It will be my job to check my ego at the door and decide which ones are good for my patrons, and let serendipity take it's course.

Title: Collections Part 2

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Databases. Publisher journal datasets, full text aggregator databases, citation databases, periodical indexes, full text historical newspaper databases. The range of databases out there boggles the imagination. What will survive and what will wither away in the face of Google Scholar? What will I have to pay for and what will be available for free? Clearly the key challenge to the creators of these databases will be to add value.

Bibliographic databases. If what you can get for free is good enough, why pay for something else? In 10 years, will Google and its successors be virtually good enough for everything, leaving no room for the traditional abstracting and indexing vendors we have today? On this I'm fairly certain the answer is going to be "yes." I don't think it'll be too long before the database vendors will have a very hard time convincing me to lay out very big bucks for their data. It will be a huge challenge for the A&I vendors to step up and conquer the Google monster. We may not even be that far away. When Google Scholar is out of beta, presumably having taken advantage of all the free R&D feedback we librarians have given them, I predict it won't be too long before it will be good enough for virtually all needs. Sure, there will be niche areas that won't be well served at first, sure some publishers will continue to refuse to give Google their metadata (especially publishers that also own A&I databases), but I have a hard time believing that this won't all pan out in 10 year's time. Remember, these services will be in big trouble when Google Scholar starts being barely good enough, not when Google is a perfect replacement for their services. And what happens when Google starts buying up the A&I services to get their metadata? Will all those A&I services actually disappear in 10 years? I doubt it. Habit and inertia will probably continue to influence our buying decisions, but the writing will certainly be on the wall.

Their only hope? Adding huge amounts of value: better searching interfaces, alerting services, RSS, innovative data analysis tools. We're already starting to see it with services like Web of Science, Scopus & SciFinder: a huge evolutionary push to add more value, to make the products worth buying. And those three will be amongst the best placed in my opinion because they do concentrate on adding value to the data. So, in 10 years, very little of my job will be involved in A&I indexes. Unless, of course, once Google Scholar has conquered them all, it becomes a for-fee product too.

So, what will I do with all that money I'm saving...

Full Text Databases. To me this seems to be a huge growth area, one that will definitely survive and thrive. The killer app here is digitizing the vast amounts of print material that's out there and making it searchable. Newspapers, journals, magazines, everything. People already expect that everything worth reading is online -- it seems to me a good marketing strategy is making it so. This is stuff I'm willing to pay for, things that my patrons will want to be able to access and read. It's already happening: the New York Times, Globe and Mail, Toronto Star, all the JSTOR journals, Google Print. In 10 years, these will be the hot commodities in our libraries, all the stuff that the students are so frustrated that they can't find online. Why not all the Canadian newspapers back to the first issue? Why not all the books in Google Print full text searchable (and readable, for a fee). Who doesn't want to license the full text version of Google Print when it's finished -- and it should have made some pretty good progress in 10 years. Lots of journals haven't had their backfiles digitized yet. And what about digitized versions of scholar's private papers?

In 10 years, collecting and providing access to these full text collections will be a major part of my job, the money freed up from A&I databases funding massive digitization projects. As usual, just making sure all those student eyeballs know that the library has what they're looking for is going to be a major challenge.

And why just text? Why not image and digital video collections, old movies, tv series, documentaries? Audio files from old radio broadcasts? There's not much I can't imagine becoming part of our collections.

Now, some of this isn't directly scitech related, but I think many of these resources would benefit the entire patron community and should be supported.

Other. So, what else will I be collecting in 10 years? Lots of stuff that's a bit on the fringe for your average library today will become mainstream. The biggest will be data -- climatic, geospatial, astrophysical, statistical, genomic, sensor data of all sorts. Science will become more and more obsessed with computational methods, and that kind of research both requires and generates large amounts of data. It will be part my job to make sure that the data generated at my institution is widely accessible to other scholars as well as making sure the world of data out there is known by and accessible to the scholars at my institution. Getting them to realize I can help with that sort of thing (and to deposit their data in our repository) is always going to be a challenge.

Learning is becoming more and more interactive, active learning is an oft-heard buzzword. For a generation raised on video games, learning will become more like a video game. It makes sense that the library would be in a good position to collect and make accessible the kinds of interactive learning modules that will start to become popular in the next 10 years. Just as learning becomes more interactive, it will also become more connected and shared. It also makes sense that the library will be able to play a role in setting up and maintaining connected, shared learning spaces (the ancestors of which are blogs and wikis) in which the interactive modules will reside.

In a sense, I guess I'll be able to "collect" these environments; I will have to make sure other campus constituencies don't jump into these kinds of things before I'm even aware. The library has a lot to bring to the table, but it's important to know that we'll have to invite ourselves rather than waiting for someone else to think of us. Making sure library computing facilities have the software applications students need is also a form of collecting. And then, of course, is the stuff I'll be collecting that I can't even imagine now.

Title: Collections: Further Thoughts on Abstracting & Indexing Databases

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The last one of these posts from way back in the fall of 2005 sparked a bit of response, in the comments and in an email from Roddy Macleod of EEVL, taking issue with my implication that traditional fee-based bibliographic databases are going the way of the dodo bird. The main bone of contention seems to be based around the value of subject-based indexing and thesauri provided in bibliographic databases versus the lack thereof in that most popular of free web search engines: Google.

Before I go too much further, I think I should clarify exactly what I'm talking about when I say Google / Google Scholar. I think I tend to use the lower case version, google, almost as a one would say kleenex for tissue. I mean specialized and general freely available search engines that can be used for scholarly research. So, Google Classic, Google Scholar and the new kid on the block, Windows Live Academic all the others that exist now and will exist in the next 10 years. Let's just call it googlesoft.

One of the interesting things about speculating about the future, is that everyone has a different take on what's in store; of course, this is half the fun if we're all thinking about the future at the same time, we get to bounce ideas off each other and hopefully change and grow our own conceptions. There are also, I guess, two ways to speculate about the future: first of all, how we think things are going to turn out and second, how we would like things to turn out. Dystopian versus utopian, in a way. I guess many have viewed my speculations as quite dystopian and I can live with that. Certainly, I view our roles as professional librarians as evolving quite a bit over time in particular from being a group who had a definite service to offer that the customers really had no choice but to use (the situation up until the early 1990's in many ways) to being a group that has to make a case for their usefulness to their potential customers (ie. the net generation, millennials, whatever you want to call them). This group of potential customers have lots of choices about how they are going to do the research they need, both for their courses and, for faculty members and grad students, the work that makes up their thesis and research work. And we must not forget that today's connected millennials are going to be the new faculty members in that magic 10 years. Certainly the habits and expectations they have now will manifest themselves in their new, adult roles. If anything, they will be intensified. Current faculty members are certainly attached to the system of journals and conferences, to publishing monographs, to the apparatus of scholarly publishing that we know. But, will they retain this attachment and will their new colleagues have that

attachment at all? I suspect the answer to this question is that, no, they will not retain the same level of attachment to the journal/conference/monograph culture that we have grown used to. Or at least not in the same way as in the past and particularly not the STEM crowd.

So, what does all this have to do with googlesoft?

It has to do with expectations of simplicity, it has to do with the desire to find rather than search, it has to do with convenience and most of all, it has to do with “good enough.”

Librarians place a high value on subject classifications, controlled vocabularies and all those parenthood issues. And they’re incredibly powerful tools to make our databases easier and more useful. But, when you get right down to it, formal human-generated subject classifications aren’t the only strategies for deciding what a particular document is about. There are informal human-generated classifications that can be useful (ie. folksonomies) as well as automated text mining subject classification methods. That is certainly an active area of research and development and it’s not hard to imagine that a lot of progress is going to be made in the next decade. And certainly, these automated and informal methods are going to be an awful lot cheaper than formal human ones. And that’s going to be important, because it’s also very important that googlesoft remain free to users. And text mining isn’t the only way to decide what a document is about. There is also relevance ranking via links, a popular method that googlesoft et al already use to find the most relevant documents in a search. Will formal, human-created article metadata disappear completely in just 10 years? I doubt it, but we definitely start to see the shift in that time frame. So, the first reason I think that subscription A&I databases are in trouble is because I believe that ultimately a “good enough” system of automated subject classification will be devised that will work in tandem with user-generated tagging and keyword assignment and, where necessary, human-generated formal classification. (Remember, I’m talking A&I services here, not book cataloguing which I don’t think will be affected in the same way.)

The second reason is because I think our users like using the free ones, and that they will continue to like the ones that they’ve grown up and used in elementary school and high school. They’re quick and easy, they mostly return fairly relevant hits for most clearly defined topics. It’s just easier to find “good enough” and that is not necessarily a bad thing. And this is a trend that will only get more pronounced over time as the expectation comes around to quicker, easier, more integrated, more connected, more open. Our patrons will increasingly get addicted to those things long before we see them, it’ll happen in high school. It’ll be a huge challenge for the subscription database vendors to compete with googlesoft in the coolness, openness

and ease of use categories. And it will be our job to make sure our students understand how to use these search engines effectively just as it has been our job to make sure they use current products effectively.

Think for a minute. Compare the revenue and market capitalization of Google and Microsoft versus Elsevier and Thomson? (Take a look here: http://investdb.theglobeandmail.com/invest/investSQL/gx.company_rep?pi_mode=SYMBLIST&pi_type=LATEST&pi_currency=RPT&pi_param_1=MSFT+goog+toc+ruk&iaction=%A0Go%A0.) Who has the resources to radically improve their products, to acquire metadata, to market and promote, to win this particular battle of free vs. fee?

Where are the publishers in all this? They want the best and widest distribution of the metadata for their publications. Whether OA or subscription-based, eyeballs looking at documents, creating impact, that is what is going to drive their business model. That is how they will justify themselves to their funders, be they governments, libraries, authors, whatever. The publishers are probably even now starting to realize that it really doesn't matter if someone finds your document through INSPEC or Google Scholar, as long as they find it and recognize the value you as a publisher provide. Certainly, there have been studies that show that open access documents have a greater impact than non-OA; it would seem to follow that more widely available and searchable metadata would also have a greater impact for the author and publisher. Subscription A&I databases are potentially in trouble because content publishers will gladly distribute their metadata to anyone and everyone who wants it because it is impact that drives their business model.

Another thing that we must remember – as librarians, our loyalty is absolutely to our patrons, not the A&I or content publishers. Obviously, we want those organizations to do well enough to continue to be able to provide their products to us, but really that is our only interest in their survival as organizations. We value them for what they provide for our users (of course, it's quite complicated here, as I certainly value and appreciate scholarly societies very differently than commercial publishers). Over the decades, the organizations that have helped us to provide products and services to our patrons have evolved and changed as we and our users continue to evolve and change. If today we spend a fraction on serials binding compared to 10 or 20 years ago, well, we make our decisions based on our needs and the needs of our users not the needs of our vendors. As librarians interested in free and open access to scholarly output, we enthusiastically support the Open Access movement. Good quality free discovery tools are just as much a part of the goal of providing access to that output as good quality free journals. Just as I mostly don't care what the business model is of companies that provide OA journals (ie. scholarly society, commercial publisher, dedicated OA publisher, somebody in their basement), I also

mostly don't care what the business model is of companies that provide freely available search engines. Can an A&I company add enough value to the metadata to make it worth paying, no matter what? Sure, look at SciFinder as a perfect example. Subscription A&I databases are potentially in trouble because librarians' loyalty to them is contingent on the value they add to the information discovery process.

So, to sum up, my real goal is to serve my user community as best I can and if in the longer term I see an opportunity to maximize my expenditures on content or infrastructure by minimizing my expenditures on discovery tools, I will seize it. What's the time frame for me to make this kind of shift? I think that in the next decade we will certainly start to see expenditures on A&I databases diminish as free alternatives get better and, more importantly, are perceived (by our users and, ultimately, by us too) as equivalent to the more expensive alternatives. The A&I databases that survive this shake-out will be the ones that find ways to very significantly add value to raw metadata.

(Note: Please see Appendix 1 to see further speculations on the Future of Bibliographic Databases.)

Title: Instruction

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Introduction

My crystal ball is a little cloudy here, in many ways the future of my IL instruction role is the cloudiest, the hardest to discern the direction of, the one I'm most uncomfortable predicting. What we do in our instruction is so geared towards getting students comfortable doing literature searches in their disciplines that every change, every bump in the road I see in the disciplinary landscapes, the evolution of the STM literature and discovery tools affects what I'll be doing in instruction. In this brave new world, what will I know that students will listen to and their profs will consider valuable enough to give me some of their class time? These millennials, these new students are increasingly comfortable and confident in their search skills, will they imagine that a librarian will know anything about searching that they won't? Notice how I didn't say competent. Sure, they will have a pretty good level of competence, mostly from sheer trial and error over a long period of time. But of course, no one is a perfect searcher, particularly a young person who has only begun a long career as an Internet searcher. More experienced searchers will always have something to teach to less experienced searchers. But, will those student searchers actually believe this is so, or, with the arrogance of youth, believe that they know it all? This is the challenge -- breaking down that barrier of confidence and convincing students and their profs that we have something to offer.

Difficult to predict, difficult to judge. But I'll try anyway.

The present

It seems that there are a bunch of different kinds of things I try to teach (standards here: <http://www.ala.org/ala/acrl/acrlstandards/infolitscitech.htm>): disciplinary context including relevant document types, scholarly communications patterns including concepts such as peer review and gatekeepers, the social contexts of information in the online world as well as some nitty gritty database search skills to find the stuff their prof wants them to find. I'll also touch on administrivia such as getting library cards, remote access to eresources and using virtual reference. All in 40-75 minutes, sometimes in lecture format to a large class, sometimes during mostly hands-on lab session, sometimes to grad students (who get the full monty) and

sometimes to first year students (who get a more skill-focused, assignment-focused presentation).

In the future, perhaps the most important consideration will be access

It's one thing to have something useful to contribute but it's quite another to convince other people to let me contribute. First of all, more and more the instructional opportunities I do have will grow out of the relationships I have with faculty. The idea that librarians can help them give their students an orientation to the scholarly communications patterns of their disciplines won't just pop to the top of their minds from nowhere. To win faculty members' respect and trust, I will need to build a store of credibility with them, to convince them that I truly understand their disciplinary culture and can impart that knowledge to their students. Perhaps, since I won't be so deeply plugged into one very narrow research area, they'll actually come to believe that I might have a somewhat broader view of the discipline and even some areas where their discipline intersects with others that I might also be knowledgeable about. Liaison and outreach will become an important way to market our services to faculty. Given that, I think that my instruction will be less about how to search but more about what it means to be a scholar in a particular discipline: what functions do different types of documents serve, how and where are those documents created and published, what are the specialized tools that you need to use to find and organize those documents, how do you network and communicate with other scholars and students in the field and how does the student, graduate or undergraduate, contribute to the creation of new knowledge. And that's what I'll need to convince faculty members of to get access to their students.

What do I teach now that will drop off?

Search. I really have a hard time imagining I'll spend much time on the mechanics of search in 10 years. Maybe I'll spend a few minutes on strategies for narrowing searches, but that's probably it. Concepts of relevance, keywords and all that, the students will probably be quite familiar with already. I expect to spend next to no time on *how* to search. This is shift I'm already experiencing in my instruction. Although I still find that many (if not quite most) present day students don't know how to search anywhere near as well as they think, they won't really see this as something I can teach them in an instructional setting. The difference-maker for that kind of instruction is really good old fashioned just-in-time reference.

Another thing that I expect to disappear from my teaching is showing how to go from the search engine item to the actual document. By 10 years from now, I

certainly hope that going to the full text from the search engine (be it a for-free or for-fee engine) will be automatic and that students will almost never encounter a case where the document they want is not available online, even if we don't subscribe. Like I mentioned way-back-when, I don't think scitech students will be using that many print books anymore. When they do encounter a print-only book or a reference to an article old and obscure enough not to exist online, I hope our discovery tools will make it quite apparent that that's what's happened. And in that case, I imagine that 99.999% of the time, the student won't bother trying to find that obscure old document. An interesting concept related to this is the integration of search tools. If the OPAC and all those A&I are subsumed in the MicroGoogleSoft omniplex, I won't have to talk about how you have to use different tools to find different document types.

And since I don't expect to be buying all that many print books in 10 years, I don't expect to be teaching a lot about finding a retrieving print books.

What will I teach that will fundamentally stay the same, perhaps only slightly different in details?

This is a tough one. Can I completely leave out administrivia? Most of it's really marketing: opening hours is really "come to the library," accessing licensed resources from off campus is really "hey, use our cool stuff even from home" and so on. So, I think this will stay to some degree, just talking a bit about what the library is, where it is and why students might want to try out the physical and virtual spaces, trying to convince them that we're there to help them and that they shouldn't be shy about asking for help. Although the actual stuff I talk about may change, for example I may talk about the virtual location of IM-y things, blogs & wikis as much as the physical location of reference desks or book stacks. The attitude might be something like, "You know we're going to have these these tools, well we do and they're here."

Are there things that I don't teach now but will do so in the future? Or that will be fundamentally different?

Ah, the big one.

- I think the key here will be integration and collaboration. I will teach them how to be social in an academic, scholarly context. Using various software research aids like the descendants of the current citation managers, various interactive social research environments, resembling blogs, wikis, open and collaborative peer review systems they can contribute to. My goal will be to

teach students how to quickly and efficiently collaborate with other to create the wide variety of documents that they need for their course and project work. As well, I will teach them where and how to create new knowledge, to contribute to a wider world of knowledge.

- And, of course, the students' disciplinary context and how what they are trying to do in their projects and assignments fits into that context. So I'll talk about concepts such as gatekeepers; the invisible college; whatever peer review becomes; whatever journals become; whatever various formats conferences take on; patents and standards for engineers; physical property data for chemists; language, operating system and other technical manuals for computer scientists (and really, I have no idea what forms those types of information will take on in 10 years). I teach these disciplinary concepts now, but mostly fairly quickly as a way to give context to the rest of the presentation rather than making up the meat of the session. As I discuss above and below, this will become the core, the foundation of my instructional efforts, what everything else hinges on.
- If I don't really teach search anymore, I'll probably concentrate more on discovery. I'll be teaching the tools that students need to let them know what they should be reading, that surface for them those materials that they need to do their work and move their research forward. These tools will be the descendants of the Faculty of 1000, recommendation sites like Digg, bookmarking like del.icio.us and other collaborative peer review systems they can tap into to discover important new documents, be they articles, patents, standards, whatever .

And how about delivery?

Will I deliver my instruction in new and different ways? Lots here depends on whether higher education in general will be delivered in new and different ways, probably using some combination of streaming video, interactive virtual environments, traditional classrooms, content management systems, off-site at co-op and practicum placements. It's fun to imagine that I won't just be standing in front of a classroom or roaming around in a lab -- although those are formats that will likely still be popular. I could be an avatar in a virtual, game-like environment, a descendant of modern course management systems, or a designer of interactive tutorials or a part of a team-taught core course. The options are quite varied and I think the key to our future as instructors is to be able to go with the flow, to adapt to a changing environment, to go where the students are not where they used to be. The boundaries between instruction and reference will probably become somewhat

blurred as we try and be in a lot of different places and as our instruction becomes more just-in-time rather than just-in-case.

Conclusion

So, in the end, will I instruct? Of course, I really don't know the answer to that question but I can hazard a guess, based on some of the conjectures I've explored above. I think the answer is "yes." My goals are hopeful, ambitious and achievable, but I do know that some of these things I'll have to start working on now if I want to be still doing them in 10 years. It seems to me that the most important part of my job is to continue to learn about the culture of science, the patterns of scholarly communication in the various disciplines, the new tools, the new networks and open databases, to have the knowledge that will help me build that all-important credibility with my faculty, the credibility that will convince them to give me access to their students. So this means that I have to listen to faculty, to make sure I meet new faculty as they start at my institution, to attend any meetings that I can manage where they discuss the issues that they face. I have to pay attention to what they write about themselves, in their blogs, in the journals and conferences that talk about management and educational issues from a disciplinary perspective. I have to keep up with the science stuff too, from blogs and popular science journals and books. This way, when I talk at one of their meetings, when I run into them at a campus reception, when I prepare a accreditation document, when I make a pitch for some sort of curriculum integration of "library skills," they'll think to themselves, "Hey, this guy knows what he's talking about! Let's give him a chance, maybe he can help."

As usual, I realize prognostication is a risky business at best so all disagreement, debate, comments and feedback is appreciated, as a comment here or email to jdupuis@yorku.ca.

Next up: Outreach to Faculty and Students in Physical and Virtual Spaces (I hope a shorter one that won't take me three months to write!)

Title: Physical and Virtual Spaces

Published: May 31, 2007

URL: <http://jdupuis.blogspot.com/2007/05/my-job-in-10-years-physical-and-virtual.html>

This is the last major essay in the *My Job in 10 Years* series I've been running here for the better part of two years; only the conclusion is left, and that's already 50% written. It's been a long and strange trip, very mind expanding and very interesting for me and, I hope, for you. I started out assuming I'd end up writing a total of about 2-3,000 words for the whole series, in other words a brief tour of the future about the size of an average MLIS term paper. Well, with this essay and the two appendices I've attached to the series, the total word count comes in at over 14,000 so far, with probably another 2-3000 for the conclusion. In other words, we're talking a pretty major undertaking here. These last several sections have certainly ended up being a pretty significant preoccupation during my sabbatical. They certainly take me an awful long time to write. The months between each of the last few installments are really what it took me to get my thoughts together and put them down on pixels.

In this essay I'd like to talk a little about some areas that aren't as directly job related as reference, collections or teaching. There are other areas where my role is more as a steward, things that I have a shared interest in along with all my other colleagues, some of whom may be more directly involved. I'd like to talk about the spaces we construct for our patrons, both physically and virtually. Administrators, department heads, systems librarians, IT staff, these are the ones directly responsible for these areas but I think I have a role too in shaping how these things develop and evolve.

I'm treating them together here for a couple of reasons. First of all, from a practical point of view I just want to get this series over and done with and combining the two areas just makes sense from that perspective. As well, I've also written about physical spaces before and don't have all that much new to add, making that section relatively short. And perhaps most importantly, I do think that they're related, these physical and virtual spaces, that we should probably begin to think of them together more often, to think about how they can promote each other, depend on each other and support each other.

Physical Spaces

I've already written a [fairly extensive post about physical spaces in academic libraries](#) (added as Appendix 2 in the pdf version) and I think what I wrote before still stands

up pretty well, so I don't feel the need to elaborate too much more. I will, however, reiterate and expand a little on some of the main points.

Mostly, I think we need to make sure we continue to give students the kinds of spaces they need for their academic work: formal collaborative spaces, informal group spaces, quiet study, lab spaces where they have access to the software they need to do their assignment and can do research. All these things are important now and will continue to be important in the future. I don't really care what we end up calling it, but certainly part of the mix will be things like information or learning commons's where we provide collaborative lab space, open concept or group rooms, with librarians and tech support available.

I think we're mostly getting over our food fetish. We need to figure out food and drink rules that make sense, that all the various constituents more or less support and that we're actually willing to enforce. The smell test, bottles with caps, cups with lids, nothing outrageously messy. If setting up a cafe or lounge in or very near the library makes sense, that's something that should be embraced. In the long run, it's much better to replace a few keyboards or carpet tiles than to create a space that's unwelcoming or trying to enforce rules that the community has contempt for and staff are unwilling to commit to and enforce.

It would be great if we also had some fun and relaxing times and spaces too; I'm pretty sure I'll be organizing gaming nights and other fun events such as journal clubs or chess tournaments. While not part of our core mission, they'll bring kids into the environment, make it a relaxing and fun space, one that they'll enjoy using. And while there in the space, they might just ask a question or use one of our resources that they might not have heard about before.

Another important point is how we as librarians interact with the people in our physical spaces. We need spaces that are conducive to roaming reference, to ad hoc group consultations in study and lab areas, some sort of reference desk will probably still be in use and of course we will definitely need labs and workshops for instruction activities.

Of course, there will be some interesting challenges in realizing this vision.

A big challenge will be doing all that fun, interactive stuff in what are often small branch libraries while still maintaining quiet space and lab space. It's going to be a difficult balance to strike. We also don't want to create a space that draws in some (ie. rambunctious gamers) but pushes away others (those seeking a bit of contemplation). If we try and mimic the functions of a student centre too much, if we drift too much from using our physical spaces to support the core academic mission of the

university, then we risk losing support of senior administrators.

Another part of that challenge is that we are often stuck with older buildings full of stuff. Even if we could decide what kind of cool new spaces we want, how we get from here to there isn't always obvious. While we might like to ship our bound journals and print books off into storage to make room for other kinds of uses, at the moment that would be a huge disservice to our patrons. Those materials are still vitally needed, we're still nowhere near able to make those kinds of choices in a sweeping way. I hope that by the end of my 10 year time frame we'll have started to make a major transformation from stuff space to task-oriented study and social/collaborative space and even some fun space. In the shorter term, we'll still have to struggle with a lot of trade-offs and make do with less than ideal circumstances.

Perhaps the biggest challenge to overcome will be monetary. Adding new space or doing major renovations to existing space isn't cheap. Making the case to administrators and potential donors that the library is still a vital organ for any university campus and deserves the kind of investment necessary to adapt to a new student/academic culture is not going to be easy. That convincing may be easier if we start by showing the kind of vision and leadership that less radical transformations can achieve.

Virtual Spaces

By virtual spaces I mean the descendants of today's library website, OPACs, course management systems and to a certain degree the way we integrate material we license or purchase from vendors as well as material on the open web. Basically all web-based applications, past, present and future.

I have no intention here of going into whether or not our current systems suck or if they're broken because I really want to focus on the future rather than the past. It's pretty obvious to me that library web sites and vendor search interfaces of all kinds have been left in the dust by the Googles & Amazons of the world and getting all dramatic about it doesn't move the discussion forward, it only gets people polarized and defensive. ILS vendors have let us down these last few years, but at the same time I'm not sure we've demanded enough from them over those years either. Not to mention that they are not particularly large companies with the resources of a Google or Amazon to propel that innovation. Can they come through for us in the next decade or are we on our own? Are open source systems going to allow us to build our own systems? The 10 year time frame may very well see larger institutions like universities (and larger public systems) abandoning the front office systems of ILS

vendors and embracing something else, be it relying on network level search and discovery tools or building our own systems.

Just as the internet today would be almost unimaginable to us 10 years ago, so too the internet will evolve in unpredictable and unimaginable ways in the next 10 years, thus making any attempt to discern exactly what shape our online presences will take over the next decade will be difficult to say the least. Some things are pretty safe bets: more social, more collaborative, more open, more integrated, fewer product silos. On the other hand, maybe the whole social collaborative thing won't prove to be a big for academic libraries as we thought/hoped? What if you build a collaborative space, and students don't care enough to contribute? To a certain extent, since our presence in faculty and student virtual spaces is omnipresent in all these *My Job in 10 Years* essays, I just want to talk a little about the attitude we should approach developing our web presences.

First of all, we should not be afraid to make mistakes. We should be most afraid of always erring on the side of caution. Flying headlong into every shiny new technology, magpie-like, is probably a waste of precious resources, but always being the slow and steady tortoise is equally risky. We should neither automatically reject nor embrace something just based on our own personal opinion: new is not always good, old is not always bad and vice versa. It's hard to find the balance here, but [there's good advice on that too](#). We should take the lead from the various interrelated communities dealing with people and machines: CHI, UX, human factors, ergonomics, we should read the tech blogs and books like *Information Architecture and the World Wide Web*, *Ambient Findability*, *Wikinomics* or *Everything is Miscellaneous* to name just a bunch of recent buzz books. We should figure out what the heck Web Science is. We should be restless, we should see the impossible-to-predict new paradigm shifting trends (like the rise of Google) of the next decade as opportunities not as threats, but as opportunities to engage our communities, to be mentoring our patrons into new technologies rather than scolding them about risky behaviours (hey, we're all guilty of this one sometimes). Or to let our patrons and more adventurous colleagues mentor us into new technologies.

Here's a partial list of some of the technology trends we should be keeping our eyes on over the next decade:

- **E-Science:** The way science is done is changing, and so is the way it is being communicated. It's just getting started now, but I think the next decade will see major changes: ScienceBlogs, e-science, data visualization, geolocation, the semantic web, web science, open access, open data, open source, open peer review. Not to mention electronic lab notebooks, lab wikis and a whole host of other such innovations. To the extent the way science is communicated

transforms, we must follow that transformation. Embryonic systems like [Nature Network](#) are worth checking out.

- **The social web:** Social networking software is the hottest thing going right now, but it's impossible to tell how what shape these embryonic systems will take and how permanent and wide ranging a lot of the innovations will be. Stunning, transformative innovation or flash in the pan that everyone will soon tire of: only time will tell. (I tend to the former, by the way) The one thing I am fairly sure of is that we won't see the web get any less connected or any less about relationships and definitely no less about collaboration. So, applications such as the descendants of today's course management systems, Facebook, Myspace and all the rest are definitely worth watching. We must seize opportunities to be appropriately in the same virtual shared spaces as our patrons.
- **User-created content:** It's something that isn't going away either: blogs, wikis, mashups, photos, tags, personal data stuff like LibraryThing databases. And we can't forget that a lot of our science and engineering students essentially already create mashups of data, photos and output of programs such as MatLab or GIS applications for their assignments.
- **Virtual worlds:** Second Life, RuneScape and Kingdom of Loathing (my sons' current favourite) and all the other virtual worlds are a very interesting phenomenon to watch. They certainly have a huge future as gaming environments but it will be interesting to see if they take off as business, educational and leisure environments. The potential is there for distance education and for any kind of remote mediated transaction, exactly the kind of things libraries and librarians want to engage our patrons in.
- **Mobile and ubiquitous computing:** They are already huge trends and they will only get bigger. Mobile in the sense that a wider range of handheld, portable and wearable devices will have greater and greater connectivity and computing power so we must be prepared to deliver our content to those devices. Ubiquitous in the sense that information and access to information is almost like the air we breathe these days, it's everywhere, part of every device we use, part of every landscape we interact in. We need to make sure that the content we purchase and license and the services we offer are part of that ubiquitous landscape. If it's not, we risk being left out.
- **MicroGoogleSoft:** They're calling it "discovery at the network level" now, the idea that people want to use free web search tools to meet all their information needs so we need to make sure our licensed and purchased content is findable via those tools. I more or less talked about this in the A&I Databases installment, but I think it merits a mention here as well. Right now our web presence is partly geared towards directing patrons to A&I databases and then

to full text journals. If we're assuming that our patrons don't want to use our web presence directly to find their full text content, but that they want to use a network level tool such as Google, well that's going to mean a pretty major rethinking of what we're doing with our web pages. In a narrow set of circumstances, Google Book Search is already a better tool to find books in our libraries than our own OPACs. That trend is only going to get more pronounced.

- **OPACs:** And speaking of OPACs, better minds than me have speculated about the future of that beast. I hesitate to make any predictions myself, but I would be extremely surprised if what we call the OPAC is at all recognizable in 10 years. Or at very least, the transformation into complete unrecognisability will be well under way. Findability, resource discovery, user tagging, integrating with network-level tools are all going to be important trends to keep tract of.
- **Special Collections:** One trend that's not going away is libraries creating and publishing their own content, whether it be hosting a journal or institutional repository, digitizing special collections, retrospective digitization of old journal or just contributing content to large-scale digitization projects run by other organizations. And there's no reason we can't host social networks as well, such as the University of Toronto's [Biome](#) project.
- **Serendipity:** And then there's by far the largest category of stuff we should keep our eyes on: the stuff I've forgotten, can't imagine or seriously underestimate the importance of. Feel free to add some of these to the comments.

Some "on the other hand" considerations that cannot be ignored (My apologies for sounding a bit cranky on some of these but think of it as a way of countering some of the generally boundless optimism in other parts of the series):

- **Creeping commercialization:** We can embrace the model of Google & Amazon & Flickr and whatever, be we have to be careful not to embrace the companies themselves too closely. We mustn't forget that we are public institutions and we have a duty to spend public money in a appropriate way. Sure, we need to partner with vendors to deliver the collections and services that our patrons need, but it's not now nor should it ever be our job to facilitate commercial access to our patrons. These companies aren't our friends, they want to make money off of us and our patrons -- and that's fine, it's their jobs. I'm not saying we shouldn't have excellent relationships with our

vendors and their representatives, just that we should remember what the relationship should be.

- **Privacy:** Our patrons may not care about their privacy, but it is our professional duty to protect it for them whether they want us to or not. They may not be worried about telling all to Facebook or MySpace, but our responsibilities are different since our relationship is different. They are not customers we are trying to exploit but rather patrons whose interests we are serving. Patronizing? So are seat belt laws. We need to find balance between an environment so locked down that nobody can do anything interesting or engaging and one that appropriately protects a patron's right to privacy. If you don't think privacy is important, two words: Patriot Act.
- **Offensive content:** Radical trust and user-generated content are great things, but what do you do the first time someone posts racist, sexist or otherwise offensive or hateful content, the first time there's an incident of bullying or harassment of students, faculty or staff. Do we really want to run a clone of RateMyProfessors or have our own [Kathy Sierra incident](#)? There's no guarantee that's ever going to happen (and we all hope it doesn't), but if it does we must be prepared to respond with policies and procedures that our communities support. Universities can be very fragile, sensitive places sometimes, quick to explode. We shouldn't be afraid to do interesting things, but we should be aware of the risks and be prepared to respond and not get caught flatfooted.
- **Build it, and ...:** What if we build social spaces where patrons can network and create content and...they just don't. It's one thing for people in the 18-22 age range to use the web to have fun and procrastinate, but do enough of them really care enough about their school work to actually contribute to the library's web site? Remember the 80/20 rule. And Sturgeon's Law too, 90% of everything is crap (except this essay, of course, which is all good). How do we make our virtual spaces interesting and fun enough to attract users' attention and yet useful enough to be worth our time and energy -- and theirs too. Students want their own social spaces, and may not be as interested as we would like to think in "official" social spaces.
- **Digital divide:** There's a couple of digital divides we have to keep in mind. We have to be aware that not all our students have the economic resources to play with the latest gadgetry so we have to make sure we design our offerings to be accessible to everyone. We also have to remember that not all our students want to be engaged with all the latest technologies; there's a wide range of aptitudes and inclinations within any student body. We have to resist the temptation to lump everyone in the same generation together, assuming they all have the same technology profile; we also can't forget that there's

going to be a wide age range among our students, that not all of them are teens still living in their parent's basement. We have to meet our students in the diversity of places where they actually are, not where we would like them to be.

- **Preservation:** If we create systems that have user-generated content and if we digitize special collections and host journals, in other words if we are stewards of unique content, we will have to ensure the long-term preservation of that content. Lots of the user-generated content may seem ephemeral, but I'm not sure if we should treat it as such. We will definitely need the opinion of professional archivists on this one.
- **Academic integrity/intellectual property:** Sharing is one thing, stealing is another. Or is it? What's the difference and how can you tell? What if students post assignment answers in one of our forums, for example? We have to be prepared to deal with these types of issues if we allow users to create content in our virtual spaces.
- **Patience:** This is a hard one. The challenge is not to be too impatient for things to work themselves out. Sometimes good systems just need to evolve from crappy systems, we just don't know how to get straight to the right solution at first. An example of such a transitional technology today is SFX and other link resolvers (i.e. what we call Findit@York). What we have now is not ideal -- we just aren't where we need to be yet. But compare it to what we had to do before: look in the A&I database, check the catalogue to figure out if it is online or not, try various online databases and aggregated databases. Just ugly. So, being too impatient can lead to a kind of defeatist frustration. Of course, if we're not impatient enough, that potentially leads to a complacency, stagnation and failure.
- **Vision drift.** In our rush to be all things to all people, we can't forget that our core mission is always going to be connected to the academic mission of our institution.

My job in 10 years? To plan an active role in moving my institution forward in a sane, balanced way that also embraces the endless possibilities of new technological and social patterns. To advocate for better systems and spaces for our patrons, to plan, to facilitate, to organize, to help build, to advertise, to cajole, to promote, to teach. To see the interrelationships between physical and virtual spaces, how one can be used to promote the other, how they are complementary not competing. To promote our physical and virtual spaces to faculty, students and staff. To raise funds to implement grand ideas, to make tough decisions, to understand trade-offs.

Next up: The Earth Shattering Conclusion! (Maybe even as early as next week.)

Title: Conclusion

Published: June 13, 2007

URL: <http://jdupuis.blogspot.com/2007/06/my-job-in-10-years-conclusion.html>

In many ways, the speculations I've given over the last many months since June 2005 are a best-case scenario, the scenario where we as librarians and as institutions are able to ride the wave of transformation brought upon by new technologies and social patterns. The interactive & collaborative web are opportunities; failing to seize the opportunities will come back to haunt us as institutions and as a profession. Engaging the net generation is also a formidable opportunity; failing in that task isn't an option. Empty buildings, collapsing circulation and usage statistics for purchased and licensed resources aren't things I look forward to justifying to our funders.

Our patrons and the social and technological tidal wave they are riding is what is going to drive us to embrace transformation and change.

So, if my extended ramblings over the last two years have a main theme, it's that libraries and librarians have to be able to embrace transformation, to go with the flow. Where once we had a monopoly on research, back in the day when you had to come to the library to get anything done, now our students have options. And we want to remain one of those options.

Some of the transformations will be painful, some will feel natural.

We have to move on several fronts, each just as important:

- We will have to accept and be at the forefront in changes in scholarly communications patterns. Open access, wikis, blogs, social networks, whatever, we don't want to be viewed by the new generation of scholars as behind the times. If that happens, we'll lose credibility. And credibility is going to be very important as we try to forge a place for ourselves in the new world. So, be an evangelist in your community, be it for blogs or institutional repositories or open access, but we must be at the crest of the wave or we risk going under. Really, we'll miss them more than they'll miss us. Because it's a lot easier for them to get along without us (even if with some inconvenience and inefficiency -- they won't even recognize the inconvenience) than it will be for us to get along without them. We need to use this credibility with faculty and students to encourage them to allow us to take part in their instructional activities, to help them teach their students about being scholars in their fields.

- We need to become the social learning space on campus. This is vital. We have to transform our physical spaces to make them as collaborative and inviting as we possibly can, to be the premier technology labs on campus for creating assignments. This will be a battle as labs in departments will see this as their mission as well. We also can't risk abandoning older roles for our physical space. Libraries will still have some print collections, books and journals mostly but other things as well such as archives and special collections. Magazines like *Wired* and *Scientific American* will likely not disappear and we'll have to provide them. We'll have to house retrospective print journal collections where online doesn't exist or we chose not to provide access. Our active print collections will probably be relatively small compared to today but still quite large and we'll need space for those as well. Large collections of older print material, much of which will have quite low usage but which we will not be able to discard, will also need some sort of relatively quick access arrangement. It will also be vital that we maintain quiet study space while also trying new and interesting activities to engage and encourage students to use our spaces. We will also need to be physically present in our spaces though reference and instruction.
- As for our virtual spaces, we need to build systems that are flexible, scalable, modern, responsive, appropriate, usable, fun, social, studios. It's not going to be easy. Our virtual spaces will need to evolve into places that students want and need to come to, even if they don't necessarily associate them with the physical library. So, we have to figure out what students need from us going forward and provide those collections and services. We have to market and promote those collections and services so that the people that need them will actually find and use them. What's the use of having the *New York Times* archives available if students only end up using the *NYT* site and paying themselves for what they're looking for? Or not using news sources at all in assignments, even when it's important to do so. (How many times do we hear from profs that students don't use our resources because they claim they didn't know what was there?) We need to have an active presence in these virtual spaces to continue our reference and instructional functions in these new media.
- We need to decide what content is worth paying for, either to purchase or to license. There's an explosion of content creation going on out there, an awful lot of it what might be called user-generated content. To the extent that we can harness both our own users and the mass of users on the web in general, that's a great thing. However, there's an awful lot of content that's being digitized or born-digital out there too that's very interesting and very worthwhile. Collections of primary documents, audio & video libraries, image libraries, ebook projects, newspaper archives, and much more -- these are all

typically quite expensive to create and the organizations will want to earn back their investment quite on these. Even governments and NGOs that create these repositories may want to get some cost recovery. We need to focus on the fee-based collections that will add the most value to the educations and research programs of our patrons. And if that means participating in digitization and other content-creation projects ourselves, then so be it. If that means deciding that there are other things we've been spending a lot of money on in the past that no longer add the same value, well that's just evolution.

- Related to the previous point, we also have to get over our obsession with container and focus on content. Personally, I'm second to almost no one as a bibliophile but I also recognize that we owe it to our patrons to give them the content they need in the container that's most appropriate. Sometimes that's going to be a real live paper book (and paper books will part of the collections mix for a good long while yet) but more and more it will be something that isn't a paper book, but that somehow exists online, be it text, audio, video, interactive tutorial, textbook wikis, data, property data, geospatial data, whatever.

What is the thread that binds all these forces acting upon us? All of these follow from the notion that we really need to figure out what we want to spend our money on. We have large budgets, mostly spent on staff and collections. We must continue to invest in the best staff with the best, most forward-looking skills. The new library I envision won't have fewer people, it will have more, they'll just be doing different things. They'll be highly professional and highly skilled in a range of areas, some generalists, some with very a very narrow focus. So, where will the money come from for the transformation? I have to think that it might be from collections. We will have to seriously look at the stuff we're buying and licensing and ruthlessly evaluate whether or not it truly meets the needs of our patrons and act accordingly. What will decline? Print books and A&I databases will decline in importance; to the extent that print books aren't just replaced by ebook packages, we may see some savings. Traditional journal subscriptions will start to transform into some sort of open access model in the 10 year time frame (perhaps to the extent that they will barely be recognizable as journals) so the savings there may just be starting to hit our budgets around then.

But, how are we going to justify spending more of our money on programmers, subject librarians, metadata specialists, software, hardware, virtual environments and all sorts of new services we can't even imagine yet and less on our traditional collections. When our funders say, "Aren't libraries really just about stuff?" what do we respond? Stuff is still important and we'll never stop buying and licensing the stuff

we really need, but just like the old industrial economy has transformed into a new service economy where adding value is paramount, so too has the information economy of the library transformed from hoarding stuff to adding value to the intellectual efforts of students and faculty.

At the same time as all these forces are buffeting us, we must also avoid what I call vision drift. In our rush to embrace the new, to be all things to all people, to catch the wave, we must absolutely remember that our core mission is to serve the academic mission of the university. If we try to become a second student centre or cafeteria, then I'm not sure we're on the right track. It's great to be a social and collaborative learning space, but most of us didn't become librarians to serve coffee to teenagers.

Second Thoughts

Over the last two years, I've made a lot of predictions and assumptions. Are there any I regret? Is there anything I forgot to mention but that I think is important? Well, probably lots. But I'll restrict myself to just a handful.

- I sometimes think I'm overestimating the speed at which print books will decrease in importance. For sure, the decline probably won't happen anywhere near the same way outside scitech fields, but even in scitech fields I'm not sure we won't be buying more textbooks and popular science than I thought before. Review/problem sets like Schaum's Outline Series may survive quite strongly as well since students seem to like them, but on the other hand if anything that seems to be a natural for the online environment. And certainly math and other fields may certainly continue to have a relatively strong monograph culture that will still manifest itself in us buying print books.
- In the instruction section I didn't write very explicitly about curriculum integration, the idea that IL concepts will become part of what students learn in their program of study, and librarians' role in that process. I probably should have gone into more detail, but frankly it's hard to know what direction that will take. It's nice to think that it'll happen, and that it'll be our efforts to build our credibility as subject specialists that will get our foot in the door, but we'll just have to wait and see.
- One of the things which I suspect I'm underestimating is the speed at which search & discovery will be transformed by new search tools, new OPAC platforms and the changing nature of scholarly communication. If more and more information becomes available Open Access, then more and more the tools we use to find that information will be open as well.

- And speaking of scholarly communications, I also think this is an area where I'll be completely surprised by what happens, and surprised a lot sooner than I think. This will be one of the most fun areas to watch. I look forward to watching what happens at exciting places like Nature, PLoS (Hi [Bora!](#)), IEEE, ACM and a whole host of other places as new and old publishers forge their places in the new world.
- The range of portable computing devices is exploding daily it seems, in ways that challenge me to keep track and assimilate. From the iPhone to the BlackBerry, these devices are going to play an exponentially growing role in the things we do and the way we deliver content.
- Course management systems, virtual worlds, social networking systems are all in their infancy. It's hard to judge their longer term impact on areas such as reference and instruction, so I can't help but wonder if any of my speculations will even remotely resemble what happens.
- When I started these essays, distance education was something that I really saw as outside the scope of what I was looking at -- the future of a librarians working in a physical science library serving the local student population. That was probably a bit shortsighted, as institutions of higher education are moving into distance ed in a big way. In retrospect, it's something I wish I'd incorporated more directly into each of the essays -- how we will provide collections and services to remote users. Sure, a lot of the stuff I talked about would work for them, but I also tied a lot of my ideas into the physical presence of the library.
- And speaking of changes in the higher education environment, if I were starting this project all over, I would definitely start with an environment scan. I would look at both the trends and characteristics of the millennials as well as higher level forces that are affecting and changing the higher education environment. I would draw on the kind of things that Pew and OCLC and other organizations have been publishing in the last few years.

Closing thoughts

My sons are 11 and 14 right now. Looking out 8 to 10 years from now (ie. 10 years from when I started this series in 2005), they'll be right in the sweet spot of the generation that will be in university. What do these two data points tell me? First of all, they really do love books, especially my younger son. He'll devour a big, thick novel in no time at all. My older son is a little more eclectic, he reads novels and popular science, both with great pleasure. But for school projects, they'd rather die than use a book; using a book to get information is an unknown quantity for them.

Even when I encourage them to do it, they're not that interested. They want to use the web, they want to use easy sources like Wikipedia. For good or ill, these are habits that are going to be hard to break as they get older.

So, if I'm really trying to understand how they will fit into library/information culture when they arrive, it's their focus on easy to find and easy to use. They are truly the iTunes generation, they want to want to consume bits and pieces of information/culture (buying a whole CD seems almost as odd to them as using a book for an assignment). And they can be strangely lacking in discernment too. The most recent song they bought was the old cheeseball [Eye of the Tiger](#). Old, new, good,bad -- it's just not as important as it was too me when I was their age. It'll be interesting to see if all that will change as they grow up -- for example, I expect as they grow older that they will be more interested in album-sized chunks of unified artistic expression rather than just quick jolts of musical adrenaline. But really, who knows. Although they really haven't gotten into social networking software that much, I think that's coming too. They've used IM a bit and the older has started to hear rumblings about Facebook among his peers. So, I like to think of these predictions as trying to imagine if my sons will be visiting their old Dad at the library one of these days.

As for the predictions themselves, I must admit to feeling a lot of ambivalence about them at this point. And that's because I find myself not necessarily committed to realizing *the* future I've imagined, only to bringing about *a* future. If I've imagined wrong, if there are things I didn't anticipate, well that's fine. I'll adjust my vision to changing circumstances and to changing knowledge and try and balance the needs to change with the needs to maintain our core values. A tough balancing act to be sure, but one that I think I'm up to. I want to facilitate a future, one that is good for our patrons but one that also has me in it. And I think that's what we should all aspire to in our professional lives, to bringing about the best future we can imagine, for ourselves and our patrons.

Thank you for your time, attention and patience. I welcome feedback either here in the comments or at jdupuis@yorku.ca.

Appendices

Appendix 1

Title: Is There a Future for Bibliographic Databases?

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Republishing URL: <http://jdupuis.blogspot.com/2007/04/is-there-future-for-bibliographic-12.html>

A week or so ago, Michael asked me to do a guest post here on Persona Non Data about bibliographic databases, based on some of the speculations I've made on my own blog, [Confessions of a Science Librarian](#), about the future of Abstracting and Indexing databases.

Here's how he put it in his email:

I have read your posts on the future of information databases and bibliographies etc. over the past several months and I was wondering whether you had a specific opinion of the future of bibliographic databases such as worldcat and booksinprint? ... [O]n my blog I have skirted around the idea that the basic logic of these types of databases is beginning to erode as base level metadata is more readily available and of sufficient quality to reduce the need for these types of bibliographic databases. Assuming that is increasingly the case then these providers need to determine new value propositions for their customers. So what are they?

How could I resist? I'm not sure if I exactly answer his questions or even talked about what he'd hoped I'd talk about, but at least I've probably provoked a few more questions.

In my blog post on the [future of A&I databases](#), I basically came to the conclusion that in the face of competition from Google Scholar and its ilk, the traditional Abstracting & Indexing databases would be increasingly hard-pressed to make a case

for their usefulness to academic institutions. Students want ease of use, they concentrate on what's "good enough" not what's perfect. Over time, academic libraries will find it harder and harder to justify spending loads of money on search and discovery tools when plenty of free alternatives exist. Unless, of course, the vendors can find some way to add enough value to the data to make themselves indispensable. I used [SciFinder Scholar](#) as an example of a tool that adds a lot of value to data. I think we'll definitely start to see this transition from fee to free in the next 10 years, with considerable acceleration after that.

Now, I didn't really talk about bibliographic/collections tools like Books in Print (BiP), WorldCat (WC), Ulrich's or the Serials Directory (SD). Why not? I think it's because those tools are aimed at experts, not end users. Professionals, not civilians. Surely if a freshman only wants a couple of quick articles to quote for a paper due in a couple of hours, then we librarians and publishing professionals are looking for good, solid, **quality** information and we're willing to pay for it. This distinction would seem to me to be quite important, leading to quite a different kind of analysis, one I wasn't really aiming at originally. So, I didn't really think about it at the time.

So, now it's time to put the thinking cap back on and see what my crystal ball tells me.

In my professional work as a collections librarian, I am a frequent user of all the tools I mention above. I think that BiP is the one I use the most. Over the last 5 or 6 years I've built up a specialized engineering collection mostly from scratch so I've needed a lot of help and BiP has been an enormously useful tool. I use keyword searches. I also use the subject links on the item records a lot to take me to lists of similar books.

WC I use less frequently, mostly only when I want to look beyond books that are in print and want to identify older and rarer items that I'll end up having to get on the used book market. I've used this to build up various aspects of our Science and Technology Studies collection on topics like women in science. On the other hand, WC seems to have already found a big part of its value proposition with non-experts. Look at its partnership with [Google Book Search](#). Also look at the really innovative things it's doing with products like [WorldCat Identities](#). It's not perfect by any means but you can see the innovative spirit working.

Ulrich's and SD I mostly use to identify pricing issues for journals I might want to subscribe to, so I don't use them that often. With the ease of finding journal homepages, this function is probably falling fast in its uses. As for identifying the journals in a particular subject area, that's still a useful function but I wonder what the future is if that's all they offer.

For our purposes here, I'll concentrate on the one I use most: BiP. I presume a lot of what I have to say will also more or less apply to the other specialized tools aimed at pros.

So, I definitely need quality information on books to do my job, now and in the future. But if I need quality information, what will the source be? Although of course I use BiP, I also use Amazon quite a lot to find information on books I want to order; the features that they have that I like best and use most come out of the kind of data mining they can do with their ordering and access logs. When I'm looking at an interesting item, Amazon can quickly tell me what other books are similar, what other books people that have purchased the one I'm looking at have also purchased. I find this to be an extremely important tool for finding books, a great time saver and an incredibly accurate way of finding relevant items. Also, when I search Amazon, I'm actually searching the full text of a lot of books in their database. This feature gets me inside books and unleashes their contents in a way that can't be duplicated by being able to view or even search tables of contents. I also very much like the user-generated lists and reviews. On more than one occasion I've appreciated multiple user reviews of highly technical books, especially when there are negative reviews to warn me away from bad ones. The "Listmania" and "So you'd like to.." lists are great sources of recommendations. On the other hand, it has some significant problems that keep me from going to it exclusively. For example, most any search returns reams of irrelevant hits. The subject classifications that Amazon displays at the bottom of the page I also find next to useless as they are often far too broad.

For BiP, the features I appreciate the most, the ones that draw me back from Amazon, include very good linkable subject classification and good coverage of non-US imprints. When I do keyword searches, the results seem more focused and less cluttered with irrelevant items. I also like that it gives me very complete bibliographic information, including at least part of a call number. While Amazon isn't geared to let you mark then print out a bunch of items (why would they want you to be able to do this?), I appreciate being able to generate lists and print them out using BiP. On the other hand, BiP has been slow to make their interface as quick and easy to use as Google or Amazon, to make use of the tons of data they have, to mine it to find connections, to harness user input and reviews in a massive way to compete with the Amazon juggernaut. When for-fee is competing with for-free, the one that costs money has to be very clearly the best.

Another threat to BiP is Google Book Search. As I've recounted [in a story on my blog](#), Google Book Search is an incredible tool for research, reference and even collections. Once again, the ability to search the entire text of books is an incredible tool for revealing what they're really about, to surface them and make me want to buy

them. As Cory Doctorow [has said](#), the greatest enemy of authors (and publishers) is not piracy, it's obscurity. Google Book Search is an amazing tool for a book to get known and, ultimately, to get bought. As more and more publishers realize this (and even book publishers are smart enough to realize this eventually), they'll make darn sure all their new books are full text searchable by Google (and, presumably, Amazon and others). How can BiP compete with that?

I think it's safe to say, it wouldn't take much for me to completely abandon the use of BiP and only use free tools such as Amazon and Google. What could BiP do to keep in the game? What is their value proposition for me? What is the value proposition for all bibliographic tools hoping to market themselves to library professionals now and in the future?

Some issues I've been thinking about.

- **The changing nature of publishing.** What's a book? What's a journal? What does "in print" mean? Print journals vs. online? Ebooks vs. paper books? Fee vs. Free. Open Access publishing. Wikis. Blogs. To say that bibliographic databases have to be ahead of the curve on all the revolutionary changes going on today in publishing is an understatement. Look at all the trouble newspapers are in, the trouble they're having adjusting to a new business model. Well, the book world is changing as well, especially for academic customers. The needs of academic users are quite different from regular users. They don't necessarily need to read an entire book, just key sections. Search and discovery are incredibly important to these users, almost more important than the content. They also really don't care about the source of their content, what they really care about is having as few barriers between the content and themselves. How will BiP and other bibliographic databases help professionals like me navigate this mess? Easy. By continuing to provide one-stop-shopping, only for a much wider range of items. Paper books from traditional publishers, for sure, but how about all those Print on Demand publishers? Sifting through the chaff to get the rare kernel of wheat is an important task, one I know that they're already doing to some degree. But how about digital document publishers like [Morgan & Claypool](#)? O'Reilly's [Digital PDFs](#)? White papers and other documents from all kinds of publishers? How about the incredible amount of free ebooks out there? And other useful digital documents and document collections, both free and for sale ([The Einstein Archives](#) is an example)? And breaking down the digital availability of the component parts of collections like Knovel, Safari, Books 24x7 and all the others. Any tool that could help me evaluate the pros and cons of those repositories would be

greatly appreciated. The landscape out there for useful information is clearly far larger than it used to be.

- **Changing nature of metadata.** Never underestimate the value of good metadata; never underestimate the value of the people that produce that metadata. It seems to me that one of the core issues is who should create metadata for books and other documents and how should that metadata be distributed to the people that want it, be it commercial search engines or library/bookstore catalogues. It would be great if all content publishers created their own metadata and that it was of the highest quality and free to everyone. There's a role for bibliographic databases to collect and distribute that metadata, maybe even to create it. The library world has a good history of sharing that kind of data, but I'm not sure how that model scales to a bigger world. It seems to me that there's an opportunity here.
- **Changing nature of customers.** I've [publically predicted](#) that I will hardly be buying any more print books for my library in 10 years. Libraries are changing, bookstores are changing. Our patrons and customers are the ones driving this change. As my patrons want more digital content, as they use print collections less, as they rely on free search and discovery tools rather than expensive specialized tools, I must change too. As my patrons' needs and habits change, the nature of the collections I will acquire for them will follow those changes -- or I will find myself in big trouble. Anybody that can make my life easier is certainly going to be welcome. And that will be the challenge for the various bibliographic tools -- making it easier for me to respond to the changes sweeping my world. A good bibliographic service should be able to help me populate the catalogue with the stuff I want and my patrons need. I think a lot of progress has been made on this front in products like WC, but I think to stay in the game the progress will have to be transformative. There's lots of opportunity here.
- **What's worth paying for.** In other words, BiP, WC and their ilk have to be better than the free alternatives. And not just a little better. And not just better in an abstruse, theoretical way; if it takes you 20 minutes to explain why you're better, the margin may be too slim. Better as in *way better* on 80% of my usage rather than just somewhat better than on 20%. Better as in saving time, saving effort, saving more money than they cost, making my life easier.

To conclude, I can only say one thing. In times of intense change and uncertainty, evolutionary pressure is extremely intense. Only those products and services that can find an ecological niche, a way to satisfy enough customers, will survive. To thrive is another story. To thrive requires a

redefinition of products and services, a way to jump ahead of competitors and to win new markets with something new and exciting. It's hard to tell where bibliographic databases will find their place: will they be dodo birds, or will they find a way to survive or even thrive in the coming decade. There's certainly a window to change. Nobody is going to cancel any of these core tools any time soon. But the window will close sooner rather than later.

Appendix 2

Title: Space, The Final Frontier

Published: October 19, 2006

URL: <http://jdupuis.blogspot.com/2006/10/space-final-frontier.html>

What are some of the kinds of physical spaces scitech students need on campus?

- Classrooms
- Labs
- Informal indoor space, such as common rooms, pubs, restaurants, lounges, cafes. This is a very important kind of space, as it's where a lot of the actual learning happens. So much of what we take from our educational experiences we learn from our fellow students and these spaces are where students gather to just hang out and talk. A lot of the collaboration and team work that is so important takes place in these spaces.
- Informal outdoor spaces, such as parks, fields, walks, benches. Ditto with the above. On a nice campus, these spaces can really add to the experience of being at school. Relaxing and collaborative at the same time.
- Computer labs. Places where students can work on online research and on preparing their assignments. We always think of students as being hyper-connected, but lots (more than we think) still don't have off-campus access to good computers. They're definitely expected to hand in or perform work (presentations, media, papers) that is generated on computers and institutions of higher education must provide access to these tools.
- Quiet space. Often forgotten. Students, especially science students, need quiet space to read, study and absorb the complex material they have to master. Whether they are reading books, paper journals, printouts or off a screen, they need quiet. This is still true in our online world. To do assignments, to think and reflect.
- Formal collaborative space. Also very important. Science and engineering are almost by definition collaborative these days, both in industry and academia. Students need to have spaces that will model the kind of work they will be doing later in their careers. To work on projects, to study together, to have informal tutorial/bull sessions. These spaces need to have good access to computers and software suites that meet the students' needs. Black/white boards, cork boards, all that stuff is still relevant.

- And of course, lots of other spaces too, that will vary from place to place, like departmental lounges, faculty offices, drop in centres, student services, etc.
- I'm not forgetting virtual spaces, like blogs, wikis, virtual communities, gaming environments and so on.

So, what kinds of spaces should libraries be in the business of providing to students?

A tough question, but one that is vitally important to the future of academic libraries. As content becomes less and less dependent on physical space, I believe our roles will become much more tied to the kinds of physical spaces we can provide to supplement and enhance the student's experiences. We have to use our physical spaces to provide services to students that they find valuable, that they will come back to, that they will recommend to their friends, that they will remember fondly later in life when the fundraisers come calling. We need to care enough about them to provide them with the spaces nobody else will.

To me, the most neglected one of those spaces is quiet study space. Sure, it's important for us to provide computer labs, group study space, relaxing space and classrooms. And to provide the staff to support and assist students in the activities they engage in in those spaces.

What falls through the cracks? Quiet.

At my library, whenever the ambient noise levels would rise too much, we would start getting complaints. All the staff work hard to make sure that we balance the need to collaborate with the need for quiet. It's hard in a relatively small space, but students need it and want it and they complain bitterly when they don't get it.

The challenge? Using our limited physical spaces, often in older buildings, with limited renovation budgets, to find a balance between those competing space needs. It's not going to be easy.

(For those that are interested, it was reading [A Place to Read](#) By Terry Caesar over at [InsideHigherEd](#) that got me thinking about these issues.)

(Update: I swear, this posting was totally not inspired by [this article](#) from York's student newspaper, [Excalibur](#), about the noise levels in one of the other libraries in the York system, Scott Library. But the article is also a perfect example of the kinds of space that students want us to provide.)