

Internet Librarian International 2006 Keynote

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Internet Librarians, ladies and gentlemen:

Good morning and welcome to London. Thank you for inviting me to address you on this happy occasion.

Like most people even mildly studious when growing up, as a young boy I had my first outside encounter with stern authority from behind the circulation desk at the library. Since then I have never quite lost the awe and fear I feel whenever I have to go up to a librarian and ask, meekly, if I might get some help locating in the stacks HN49<dot>I56<space>N85. Or simply to check out a book that I want to read.

For all of us who continue to enjoy reading, these memories of anticipated gratification mixed with a firm but kind (if mildly disapproving) guidance provide a heady swirl of conflicting bio-chemical responses. A guilty pleasure.

These days, of course, I experience this less and less, not because I have stopped reading library books (honest, I haven't!) but because I undertake most of my library transactions through a dedicated machine or an ordinary web browser.

Just as the tools that we, users and librarians both, wield in our library experience have changed, so too have we all needed to re-consider the roles of library science professionals, abstracting away details and generalizing from specifics. The thoughtful have long realized that in the librarian's job, managing the flow of information is what is key and central, independent of whether that information is encased in one's hands here and now, or sitting in an Internet server somewhere aspatially available on demand; whether that information is embedded in ink on acid-free paper, in a digitized image, or in a bitstream of 1s and 0s to be decoded appropriately, to become a dynamically-animated molecular structure, a piece of music, or even a sequence of instructions that will move a physical machine.

But that realization by itself still leaves room for either destructive misbehaviour or creative engagement. Are librarians only gatekeepers and revenue-collectors? Or do they actively guide information to its most productive use? When information becomes ever more fully the source and repository both of economic wealth and political power, librarians can be either the enforcers in a police state or the possibly subversive guardians for the free flow of information to its greatest social benefits.

Such tensions must be an everyday familiarity to you. But related descriptions might well apply to my own colleagues in academics, and I am not entirely sure that *we* properly recognize such subtle roles that we might play.

1. Librarians' Tools – The BitTorrent of the Publishing Industry

A cartoon strip I saw recently – one that I suspect has seen its full round of email circulation among Internet Librarians – makes the subversive point, how Librarians are information-liberators. This cartoon focuses on the Dewey Decimal System—I can't imagine how anything like that could ever be thought humorous—but the satire is no less sharp whatever the focus.

The cartoon strip begins by describing how terror ripples through publishing industry boardrooms when ordinary consumers realize how the Dewey Decimal System, deployed in diabolical tandem with something known as a “public library”, provides access to copyrighted text material for free. A sharply-dressed publishers' spokesperson appears on camera, and asks somberly, “Why would anyone pay for a book once it's accessible for free?”

Now, the way this distribution works is not completely understood except by those knowledgeable in the intricate workings of the library system. Apparently, the library first approaches a publisher and innocently agrees to buy a book. Then the book is placed on a shelf, for just anyone to pick up and read. Such an end-user achieves this aim by using the awesome indexing capabilities of the Dewey Decimal System. Any book, anywhere in the library, can have its location pinpointed within a matter of minutes. Without even having to install this Decimal System anywhere on his own person, the user can nearly instantaneously begin to read that book at leisure, *for free!*

The cartoon strip continues. Writers everywhere realize their output is being distributed for free, beyond the control of publishers to whom they'd entrusted their work. Even Tom Clancy packs it in; everyone stops writing. That Armani suit appears again to intone how he'd earlier warned that, left unchecked, libraries and the Dewey Decimal system would surely kill the publishing industry. The whole nation's flow of creativity dries up, writers quit to become instead, oh I don't know, investment bankers maybe. Economic growth stagnates.

I am, I like to think, just as cool and as knowing as those of you who found this cartoon hilarious. But, from my perspective as an economist, the cartoon has a serious edge, although not the obvious one that it is satirizing. And the cartoon poses a genuine question. If librarians are indeed only agents and brokers and store-keepers for that commodity that is information, i.e., intermediating between producers and consumers for just another commodity and where wealth is created in that intermediation process, why will there never be a similar

cartoon for, say, vendors of milk? For retailers of clothing? For grocery stores? For jewelers? For used-cars salesmen?

Is the information that librarians broker somehow special, even that information that is only puretext and even viewed in terms purely as economic commodity?

2. Demand and Supply

Brokers are middlemen who intermediate between demand and supply. Brokers bring together consumers and producers, who might otherwise not have found one another. In providing this service, brokers perform a useful function—one that increases welfare for society—and they earn the resulting appropriate rewards.

In the ordinary course of events—the markets for milk, clothing, groceries—when the brokering process ends successfully, the prevailing price is such that no buyer is left unsatisfied and no supplier keeps unwanted inventory; no buyer purchases something she doesn't want and no supplier turns away willing customers, except perhaps for fleetingly short intervals of time. This is what economists mean by demand equaling supply.

What is a little subtle in what I have just said is that when demand equals supply as described, society overall is also operating at its maximal efficiency. Society's resources are employed in production at just the right clip and in just the right quantity to provide the greatest possible benefits to all. The amazing thing is, no one had to think consciously about this for it to happen. Even the intermediating brokers are, single-mindedly, just narrowly trying to get suppliers and demanders to meet. It is far from brokers' minds, and rightly so, that in merely doing their job a greater social good might be attained.

This line of economic reasoning contains an interesting and paradoxical distinction between the individuals living within a society and that society itself.

What is true for individuals does not always hold for society. True, under appropriate conditions the narrow-minded selfishness of buyers, sellers, and brokers, paradoxically, succeeds in achieving the greatest good for society. Then, people do good for society by doing well for themselves. Moreover, under those conditions if a small tear or deficiency appears in that social fabric then social institutions can spontaneously emerge that will fix those faults.

Middleman financial brokerage is one such example. From out of pre-Industrial Revolution nothing, an entire multi-trillion dollar industry of investment bankers, corporate financiers, venture capitalists, and insurance and re-insurance companies has grown to intermediate financial borrowing and lending. No individual in society planned this; each simply followed his nose, continuing to try and do well for himself. The brokerage industry arose to fill a market

niche, just as in the theory of evolution, species evolve to fill an evolutionary niche. Free markets not only lead to demand equaling supply, but if something prevents that outcome, then like the Internet wending its way around failure in part of the network, the free market spontaneously puts in place forces to achieve that goal by creating or destroying social institutions.

Unfortunately, the opposite can also be true. Under inappropriate conditions, if something has gone sufficiently wrong in the trading system, then when buyers, sellers, and brokers continue to do selfishly what each does best, the system as a whole does *not* automatically repair itself.

In the particular market for the kind of information where librarians are brokers, it is this unhappy second set of circumstances in which we find ourselves. There is a knowledge glut. How do we know that? And what's happened to the free market?

3. The Knowledge Glut – How can this be?

When markets work and demand equals supply, an improvement in technology—making production more efficient—leads, in general, to an increase in quantity produced and consumed, and a decline in price.

Improvement in publishing technology is manifest around us, not just here at the conference but in our daily lives. The concepts of Web 2.0 and Library 2.0 (and, I hear, Journalism 2.0) simply articulate the improvements in the technology for information dissemination of which each of us already has direct first-hand experience.

Every year the Internet takes on ever higher bandwidth and, apart from Digital Divide issues, is everywhere it needs to be. The ubiquity is such that we cringe with embarrassment when we remember ourselves, not so long ago, mouthing words like “Information Superhighway.” Wikis, RSS feeds, and blogs serve up content in unprecedented quantity. It doesn't matter that most of that might be dross. All that we need and what we do have is that the best material in them is actually very good and valued content. That the user-generated material at the core of MySpace, YouTube, and Flickr among others has allowed each of these to generate more than respectable purchase prices from high-profile media and Web companies is sufficient evidence of that commercial value (whether or not artistic or intellectual). This explosion of supply comes of course from how digital technology—both information and communications—has improved so drastically.

Thus, for all practical purposes the supply of information *has* increased, and dramatically so. If digital technology has allowed non-specialist, self-publishing individuals to generate and disseminate content so cheaply and so abundantly,

how much more such power it must have placed in the hands of professionals, whose business is packaging and delivering information content of all kinds.

What's actually happened to market price and commercial quantities exchanged? While we can detect technological improvements in great generality, the holdups need to be documented with numerical detail and thus only for specific cases. But further instances in the same spirit can be easily obtained.

So, here, let's take an example close to the hearts of both you and me: library subscription prices on academic journals.¹ For science and technology publications in the year 2000 the average annual library subscription was \$1200 (or 670 GBP), having *increased* by 80% over the previous decade. Biomedical journals more than doubled in library subscription prices in the seven years after 1994.

Well, I must say this is a bit of puzzle: In the face of arguably the greatest improvement in information dissemination technology in pretty much all of recorded history (and it would have to be *recorded* history) academic journal prices have not fallen but actually increased!

This puzzle extends, and in a consistent direction. In year 2001 the top 10 most-cited economics journals put out by commercial publishers averaged an annual library subscription rate of \$1370. In contrast, the top 10 most-cited economics journals put out by non-profit publishers? Average annual library subscription rate a measly \$190 that same year.

One possible interpretation of the non-profit figures is that their prices are also their costs. If these numbers were comparable then they tell us that there is a 600% markup being tolerated by the marketplace.

But maybe the more expensive journals are simply better, in some intangible way, and justify the seven-fold price premium. Perhaps the reputation and impact of these different journals are such that I have just inadvertently compared the prices of apples and oranges. One measure of impact, quality, and name recognition is citation count. How much does a publication get noticed, used, and acknowledged by other authors? Dividing price by citation count, in appropriate units, corrects for the difference, and so potentially gives a more reasonable measure. Or perhaps the more expensive journals just publish greater quantity?

For economics journals the average non-profit price per page is \$0.18; that for commercial publishers, \$0.82. The average non-profit price per citation is \$0.15; that for commercial publishers, \$2.40. Evidently, the premium that the

¹ These figures come from Bergstrom and McAfee (2006), McCabe and Snyder (2006), and Wellcome Trust (2003).

marketplace willingly pays commercial publishers remains high—between 5 and 16 times according to these back-of-the-envelope calculations.

If in ordinary marketplaces one purveyor offers to sell comparable goods and services at prices 5–16 times that of its competitors, it would be laughed out of business. The lower prices properly reflecting costs to society also balance, at the margin, the commodity's benefits. The equalization of costs and benefits maximizes social welfare.

When, by contrast, a marketplace tolerates such a discrepancy between high price and low cost, consumers respond, rightly, by curtailing demand relative to the socially efficient outcome. Demand is less than what supply can be and ought to be. There is an excess supply of information and knowledge. The information that can be cheaply supplied is not, in fact, taken up because potential users end up dissuaded by the excessively high price.

Why do markets tolerate this?

Well, information is a peculiar economic commodity. It does not trade easily or conveniently in conventional markets. The social institution that has emerged historically to allow information exchange, production, and dissemination is an intellectual property rights (IPRs) system. Such rights do a good job in assigning priority in discovering new information and ideas, and in according propriety in acknowledging those who innovatively produced new ideas and generated new information.

It is when an IPR system is used for pricing, rather than for priority and propriety, that problems manifest. While an intellectual property rights system bears some passing resemblance to ordinary property rights (not least in the resonance of its name), what an IPR system ends up doing is creating and sanctioning monopolies. Ordinary property rights foster market competition. Intellectual property rights stifle market competition. When this latter happens, the market outcome separates price from cost, and the price markup over cost turns out to be whatever the marketplace will bear. So, what the commercial publishing industry discovered through the 1990s, even as advancing technology continued to drive costs down, is that the demand curve for academic journals is rigid and inelastic. That demand curve tolerates extremely high price markups, transferring economic rent from users to publishers.

To be clear, none of this is intended to point an accusing finger at anyone. The economic system provides incentives; each agent acts the way they should. It would be irresponsible to do otherwise.

4. So what?

If all that was going on here was a dispute between who should benefit more from the spoils of the publishing industry, that might already be important enough for us all to take an informed policy view on these developments.

But yet more is at stake here.

Willinsky, in his 2006 book on Open Access in research and scholarship describes how, from 1979 through 2001, diminishing funds, rising prices, and a fluctuating Kenyan currency forced the Kenya Medical Research Institute (KEMRI) library in Nairobi to slash its journal subscriptions to just five medical titles. Moreover, none of these remaining five, which KEMRI could barely afford, focused on tropical diseases, the Institute's primary concern. Consequently, one of East Africa's leading medical research institutes was attempting to conduct research without ready access to the most relevant, recent publications in its field.

In July 2001 the situation changed. The World Health Organization convinced a number of publishers to allow institutions in poorer countries open access to electronic versions of their medical journals. This initiative quickly grew to cover 2,000 journal titles and 1,000 institutions from over 100 developing countries.

Willinsky used this example to show the importance for knowledge dissemination of recent institutional movement towards greater openness and availability. The growth of this Open Access movement became one of 2003's top science stories, touching on both professional ethos in scientific research dissemination and the economics of the publishing industry. Many observers readily agree that a place like KEMRI should have greater access to research journals and should have more computer hardware, as the research that KEMRI undertakes is potentially socially valuable and insufficiently prioritized. Public health is a quintessential public good, and absent explicit intervention it will typically be under-supplied.

Also mentioned in the account, although with a different message, is that by June 2003 KEMRI had only one computer with a high-speed Internet connection able to access conveniently the increase in supply of published research. A clipboard sign-up sheet next to that one computer became the rationing mechanism to mediate demand and supply. Open Access alone was insufficient for raising digital attainment; computer hardware instead was the bottleneck that mattered.

(Today, if you look on the KEMRI website, you will see of course more than just the one computer.)

Now, not everyone agrees that the form of Open Access that currently exists is as successful as perhaps Willinsky sees it to be. There is dispute about the so-called Gold and Green routes to Open Access. Should all journals and publications be accessible to everyone? Should journals continue to charge whatever prices they

wish but electronic archiving then, after an agreed-upon time window, be allowed to compete with hardcopy?

Some Open Access publishers want to shift payment from readers and libraries to authors. Some publishers want authors to have a choice ad hoc whether to pay a fee and make their publication Open Access. Some observers are unconvinced that such schemes will improve the information dissemination system much or even sufficiently, as authors then balance what is good for their pocketbook versus what is good for their reputation. Will 47 additional citations increase someone's salary or research budget enough that they should pay the \$1500 publication fee to an Open Access PLoS journal? Will the multiple constituencies—authors, publishers, libraries, readers—all with different goals jointly end up reaching an outcome that is reasonably socially efficient?

The research on all these questions needs to be done still. But in one view these are all tinkering around the edges of a hugely important problem, a problem that the KEMRI example highlights.

Mispricing information is a battle not just for library resources or for dividing the spoils of the academic and publishing industry, even if that is how you and I need to play the game right now. Mispricing information is a worldwide problem that goes right to the heart of how we might be able to improve the lives of a great majority of the 6.3 billion people on earth, people whose livelihoods, health, and ultimate well-being depend on our figuring out the right way to create and disseminate information for the good of humanity.

References

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