

DEVELOPING ACCESS AND PRICING MODELS THAT USE TODAY'S TECHNOLOGY: WHAT PUBLISHERS HAVE DONE SO FAR, AND WHERE THEIR EFFORTS MAY LEAD US

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What pricing policy?

Pricing in the publishing industry has always been a black art. It is a mixture of what the competition charges for similar products, what the costs of producing the product are, and what “seems right”: a mixture of observation, cost consciousness and guesswork!

This works well in a competitive environment like mass market paperbacks, where there is choice for consumers, a clear feeling of the right price point for different types of book, and clear feedback from the market if books are too expensive for what they are – they won't buy them.

So far as textbooks are concerned, students are sensitive to price. If a textbook on the reading list is too expensive, the publisher will not see sales numbers match the number of students on the course. Pricing that is competitive with similar texts and that covers the cost of editing, production, distribution, bookseller trade discounts and general overhead generally works; it is then down to the quality of the book itself and the sales and marketing that support it.

In the scholarly sector, things are a little different. Books and journals are bought not by the end user but by libraries. The reader in the faculty may select, recommend or even insist on the titles that are acquired, without having to bear the cost of acquisition, while the purchase is made by the library, which has the budget but is driven by the requirements of its readers. Price signals don't reach the ultimate consumer – the reader. And what do libraries do when they are outraged by high price increases? They might vent their rage on the LIBLICENSE discussion list (1), but they continue to buy. So no feedback, no consumer resistance reaches the publisher. The market is dysfunctional.

In such an environment, some publishers have occasionally taken the opportunity to enhance profitability, as they have found that the market will bear just about any price. The publisher does not know what the right price for the product is, because he knows that, whatever the price, libraries will come under enormous pressure to buy it.

The purchasing power of libraries

In the twenty-five years following the Second World War, governments threw money at scientific research. During this period, commercial journal publishers became significant players, as they were much more innovative in reacting to the demand for publishing capacity than the learned societies. At the same time, university education was rapidly expanding. The abundant resources for scientific research were matched by abundant funds for libraries collecting the resulting abundant literature.

In the 1970s disillusionment set in. Science began to be seen as failing to deliver. It failed to solve the oil crisis in 1973. It has failed to show how we can avoid ecological disaster. We have turned away from nuclear weapons and nuclear energy. The credibility of scientists in such areas as the genetic modification of crops or the safety of vaccines like MMR is low. Scientists are not trusted by the general public. Government support has been reduced. Nevertheless, research and

development manpower has continued to grow in the last quarter century, albeit reverting to the growth rate of about 3 per cent that prevailed before 1939. But while there are twice as many scientists in research as there were in 1975, publishing twice as many papers per year (2), library budgets have increased by only 40 per cent.

So the literature is still growing. Overall figures show that an increase of around 100 new peer-reviewed papers a year world-wide results in the launch of a new journal. New titles result from the growth of new fields – set against the decline of others – and the overall growth rates of scientists and researchers (3).

In fact, the picture is worse than it appears. In the 1970s, library expenditure as a proportion of total university expenditure in the western world was running at 4 per cent of total university expenditure. Since that time, that proportion has steadily declined. It is currently well below 3 per cent. It is simply undeniable that university libraries have not been successful in selling the value of the library to the university community at large, and the faculty in particular. And faculty have failed to support the one facility that provides them with the literature they need for scholarship and research.

The cost structure of journal publishing

In order to understand how publishers have traditionally approached the annual pricing round, it is important to understand the process, and the factors that underlie pricing decisions:

- Scholarly journal publishers generally set their prices for the following year in May and June. This is driven by subscription agents' need to have up-to-date price files before they issue renewal reminders in September for the following year. As a result, the publisher is pricing for next year without having a complete picture of the subscription numbers and revenue for the current year; they will build in a margin of error, which itself is inflationary.
- Publishers also look at subscription agents' pricing predictions. These are published very early in the year to provide libraries with data for budgeting. But they are generally produced as a result of e-mail or telephone surveys of publishers in January or February, when most publishers are too busy with managing the renewal cycle to think about next year's prices. So their response is "around 10 per cent" or "the same as last year". What is published looks plausible, with tables of pricing data factoring in currency exchange forecasts. It becomes a self-fulfilling prophecy.
- Publishers are in business to earn profits on their journal programmes. This is true for commercial publishers and for societies and university presses. Profits ensure survival, and generate the working capital to develop new journals, expand existing titles where there is academic demand, and fund online publishing. Commercial publishers are expected to provide a return to their shareholders, and societies and university presses are expected to generate funds for their owners.
- The two principal factors that drive pricing decisions are the costs involved in publishing, and the circulation of the journal. These are crucial, as costs have to be recovered by amortising them across the circulation. Reduced circulation does not affect the number of papers published, but does drive up the cost of servicing each subscription.

There is much misunderstanding about what costs are inherent in journal publishing. Most of this is due to the inarticulacy of publishers incapable of explaining what they do! Publishers compile and package information and manage the process of distribution to customers. They

investigate the needs of the market and develop new products. They make the investment and bear the financial risk, based on their independent editorial evaluation. And they ensure that added value is given to published information through quality control processes and sophisticated digital editorial techniques. All of this costs money.

It is important to realise that 60 to 70 per cent of the cost of publishing a journal is incurred in processes that are not dependent on the medium of output – paper or online. Paper, printing and distribution are a small portion of the subscription price. The cost factors include:

- Direct costs such as review and refereeing, editorial work, preparing illustrations and typesetting, and indirect costs such as subscription maintenance, marketing and author administration. These cost factors are fixed, and average about US\$ 4,000 per article.
- Institutions that were once prepared to carry the cost of editorial offices and secretarial assistance are no longer willing to do so; the publisher is expected to pay the full cost of these facilities.
- New journals serving new areas of research have to be funded from existing resources – *i.e.* from the revenues earned from existing titles. A new STM title can build up losses of up to US\$ ¼ million in three years, and not reach break-even until Volume 6.

There have also been changes in the pattern of subscriptions. As publishers publish more articles and more issues – an increase from 6.5 issues in 1975 to 8.3 in 1995, prices increased and individual subscriptions, priced lower than the library subscription, declined. Readers began to rely more on the library. Subscription numbers dropped and the fixed costs had to be spread over fewer copies, thus increasing institutional prices at a greater rate than inflation and size increases can explain (4).

Publishers have responded by developing non-subscription revenue like advertising, supplements and special editions, licensing to aggregators and document services, putting more words on the page, and fully automating typesetting and page layout.

But online publishing has not reduced costs. Those same fixed costs still have to be recovered in revenue. The savings in paper, printing and distribution are more than offset by the need –

- either to fund capital investment in computer and telecommunications equipment, employ skilled technical staff, and provide twenty-four hour availability and customer service.
- or outsource online processing and delivery to a hosting service such as High Wire Press, Ingenta or Meta Press. Such costs can range from \$2000 to \$40,000 per title.

Most journals continue to have high fixed costs and a low number of subscribers.

Alternatives to the individual subscription price

We are now seeing new pricing models that avoid the straitjacket of the individual title subscription price. This has been the conventional model to price the traditional printed journal. It is inflexible, and relates to a physical product that may have multiple users in the library, but has, by definition, only a single user at the printed issue level. Increases in price – or reductions in library budgets – lead to cancellations which, in a supply driven environment like journal publishing, create further price increases to cover the costs of producing the journal spread over a smaller number of subscribers.

I would like to review the different generic models being used; they all have advantages and disadvantages:

- *Prior year plus a premium*

The first development was the APPEAL licence created by Academic Press. This opened up access to all AP's journals online for a price set at the prior year's subscription revenue from the customer plus a premium. This model is familiar, and it has worked for both the library or consortium and for the publisher in the context of the "Big Deal". It stabilises the publisher's revenue, which is important if subscriptions are in decline. It provides price stability for the library. But it presents problems:

a. This model assumes steady increases in library budgets. The problem in 2003 in the USA is enormous:

37 out of 50 states in the USA have static or reduced budgets for higher education in 2003. During the 1990s government at the state and federal level reduced taxation while maintaining public expenditure, buoyed up by tax revenues from an expanding economy. However, since mid-2000 tax revenues have gone down as a result of the current economic slowdown, and government deficits are growing:

- 18 US states have tax rates indexed to US Federal tax rates; the Bush Administration's tax cuts have automatically reduced tax rates in these states;
- other US State governments are unable to increase taxes on political grounds.

In both cases this has resulted in public spending being cut in order to keep public sector borrowing at manageable levels. This situation is mirrored in many economies in the developed world.

The US Dollar has declined against both major foreign "publishing" currencies during 2001-02. On Wednesday, 17 July 2002, the rate of decline over the preceding twelve months has been:

- 13.4 per cent against the Euro (EUR), and
- 12.1 per cent against the Pound Sterling (GBP).

Approximately half of the primary research journals published originate in the UK (GBP), The Netherlands/Germany/Nordic countries (EUR). The impact of the decline of the US Dollar directly affects the purchasing power of academic libraries in the USA and in other countries influenced by the fortunes of the US dollar, e.g. Australia, New Zealand and South East Asia. As foreign titles will be more expensive in local currency, the impact will be felt on US-originated titles as libraries seek to maintain a balanced collection. Cancellations are inevitable.

While the converse is true, that libraries in Europe will enjoy greater purchasing power in relation to US-originated journals, this does not compensate for the loss of purchasing power in the USA and dollar-denominated markets.

b. Moreover, last year's revenue may be relevant to this year, but may not be to 2006, when the customer's circumstances or needs may have changed.

- c. The response to this situation by OhioLink subverts the very nature of the Big Deal. OhioLink proposes that the consortium be allowed to delete titles from the list and that the charge be reduced in proportion to usage. Leaving aside the thorny issue of definition in relation to what constitutes usage, this strikes at one of the core “virtues” of the Big Deal, which is that it provides access to literature that was never held on subscription before.

- *Variations on the title subscription price*

A number of publishers have devised schemes that retain the subscription price of the individual journal titles as the basis.

- **Wiley’s** Enhanced Access licence applies a “content fee” of 90 per cent of the subscription price, and then adds:
 - A “print fee” of 10 per cent for one copy, 20 per cent for two etc;
 - From 2002, an “electronic access fee” of 5 per cent for one site, 4 per cent for 2-9 etc.
- **Blackwell Publishing’s** online subscription price is 90 per cent of the equivalent print price. It provides online access to the entire journal list for a negotiated flat fee, or will provide a discount on a scale related to the number of subscriptions.

What these approaches retain is the flexibility of choice for the library, and, in Blackwell’s case, price breaks based on volume: a more conventional approach to pricing that other industries would recognise as familiar.

- *Simultaneous users*

This method is the traditional model for pricing databases, especially in business and financial markets. In public and school library markets, some companies have adopted it. The simultaneous user model is an attempt to relate price approximately to an assumed level of usage. I used to think that it was probably inappropriate in the research journal environment, where usage is typically thinly spread across a broad range of content. Nevertheless, **Emerald** uses it as one of the factors they deploy in pricing a package for a particular customer, whether it is an academic or a corporate customer. Their approach is, not how many FTEs or sites have you, but how many readers are likely to be accessing the same information at the same time. Furthermore, the package is really a database of articles tagged by keyword, rather than a collection of journals as such; Emerald sees the journal as the brand with meaning for authors, but the article as the unit of consumption for readers.

- *Population based models*

A model that has attracted much attention in the past two years is based on population: full-time equivalents, or FTEs, which are defined as full time enrolments in education, or number of employees in corporate, government and professional libraries.

- **OUP’s** pricing scheme for the Oxford English Dictionary(OED) and the American National Biography(ANB) online in the USA and Canada is interesting for the method by which it attributes different weights to different types of institution:

4-yr Academic Institutions: 100% of FTE staff/faculty/students

2-yr Academic Institutions/Specialized

Institutions/Tribal Colleges/Universities:	50% of FTE staff/faculty/students
Middle/High Schools:	15% of number of students in Grades 9-12
Public & State Libraries:	4% of the population served up to 1,000,000 3% of the population 1,000,001 – 1,999,999 2% of the population 2,000,000 and more
Corporations/Govt./Military Agencies:	100% of employees with network access
Non-Profit Organizations:	50% of employees with network access

- **BMJ Publishing Group**'s institutional subscribers to print no longer have free access to its specialist journals online (the British Medical Journal itself is available online free of charge). Institutional Online Access is based on FTEs at the institution (including remote sites that have online access to the journal). FTEs are calculated on the following basis:
 - Educational Institutions: Total number of medical faculty, researchers and students
 - Hospitals: Total number of clinicians (excluding nurses), pharmacists & researchers
 - Corporate: Total number of researchers, medical information & sales/marketing employees
 - Government: Total number of professionally qualified employees

Prices have been separated into two groups with common pricing per journal for each group; institutional subscriptions combining print and online receive a substantial discount:

<i>FTE band</i>	<i>Group 1</i>		<i>Group 2</i>	
	<i>Online</i>	<i>Print & Online</i>	<i>Online</i>	<i>Print & Online</i>
Small (1-400 FTEs):	\$480	\$545	\$400	\$450
Medium (401-1,500):	\$720	\$785	\$600	\$650
Large (1,501-4,000):	\$840	\$905	\$705	\$705
Extra Large (over 4,001):	\$895	\$960	\$750	\$800

FTE-based schemes, including 'FTE banding', have been adopted by the **American Association of Immunology** (with five bands) and **OUP** for *JNCI Cancer Spectrum* (with three bands).

- *Usage-based pricing*

One of the most interesting alternatives to the traditional subscription model is one based wholly on usage. The early anecdotal evidence, from organisations such as OhioLINK, the University of Toronto in Canada, The University of Warwick in the UK and Macquarie University in Australia, is that, where a package of journals is opened up to users, the pattern of usage does not follow the journals actually purchased by the library.

OhioLINK is a consortium that comprises 82 member institutions and 120 delivery sites from ARLs to public and school libraries. Before it was established, an average of 25.1 per cent of 4,800 key journal titles from 25 leading publishers were held on subscription. The highest holding was 55.1 per cent at Ohio State. OhioLINK has negotiated licences for access by all its members to some 3,700 titles, and now had data covering over three years' usage:

- 85 per cent of usage came from 40 per cent of the titles available online via OhioLINK

- 52 per cent of usage was from titles not previously held on subscription at the user's campus; at Ohio State, with a huge collection, the figure was 30 per cent

Clearly the smaller libraries benefit from access to volumes of journal literature that were previously unavailable. More significantly, the major ARL libraries within OhioLINK - Ohio State, University of Cincinnati, Case Western Reserve - now regard access as more important than selection (5).

This experience indicates that providing access to a large package of material but paying every time a reader - the real customer - uses an article may lead to a democratised information service in which choice is not mediated by the library.

It is possible to envisage a sliding scale of usage fees, where the more articles are used, the lower the fee per article at the margin. Publishers would need a guaranteed minimum payment and librarians would require a cap on expenditure. Experience will dictate the level of fee per use, and how the sliding scale may be set. The benefits include wider access to a broad range of content, payment by results, and no more worries about what constitutes a site or a user.

However, the contrary has been found (6) for NERL (North East Research Library consortium). Analysing usage of the Academic Press IDEAL package, titles not subscribed to in print were used ten times less than those held on subscription locally:

- the top ten titles accounted for 44% of downloads
- the top 83 comprised 90% of downloads, while
- 123 titles represented only 10% of downloads.

So we are a long way from seeing usage as an acceptable model on which pricing can be based. There are no accepted standards for measuring usage, although definitions and a code of practice are being developed by COUNTER (Counting Online Usage of Networked Electronic Resources). So this remains a gleam in the eye.

Anglo Saxon Pricing Imperialism?

There has been criticism of these pricing strategies, notably of the FTE model and of the one-price-fits-all strategy, as being wholly inappropriate for countries outside the English speaking world (7):

- They are inappropriate for countries where the traditional method of teaching is the 'master class'; the use of information is low (e.g. between Spain and the UK the ratio is 1 to 4, and the USA 1 to 7)
- FTE models is not applicable in many European countries where neither the authorities nor the universities have data on their students. Moreover, universities play an occupational role for youth; southern European countries have a higher proportion of students than northern countries, but the drop-out rate is very high. It is not appropriate to treat students that are not effectively future graduates for FTE purposes.
- The majority of databases and electronic journals are published in English and have an Anglo-Saxon cultural bias. Most students in the Latin countries of Europe and America have poor English, but pricing models assume that they have the same potential for information consumption.

So we clearly have a long way to go to price to market in a coherent and rational way.

What are users looking for?

These methodologies are very well, but they still beg the question. How is the quantum price set? What is the end result in money terms? I suspect that the answer is that any economies in production and distribution that you might think would result from a shift to online delivery will be more than eaten up by the different support facilities required and enhanced functionality and by the changing nature of the research and professional literature that this will bring about. It all depends on what our users want.

Users want interoperating resources. What does that mean? It means that the user wants to assemble the information he or she wants on the spot, without being made aware of this involving different resources and different suppliers or different servers. Pharmaceutical companies have been working on this for years. If you visit the Head of Documentation (or “Librarian”) at a pharmaceutical company, it becomes clear that the overriding priority is to create a seamless information service that integrates a variety of both primary and secondary publishers’ output. The researcher ideally should not be aware that he/she is moving from, say, Web of Science to individual journal sites to the Human Genome database and back.

The complexity of information is increasing as the inter-relationship between different forms of content or data can be exploited as the technology improves. We are now concerned not just with published literature in the form of journal or conference papers, but also content that lies outside the formal literature. Moreover, the distinction between scholarship and research on the one hand, and practitioner information on the other, is becoming blurred. Evidence of this can be seen in the creation of portals like CABI’s. These sites extend the literature well beyond formal published research or even textbooks and practitioner reference works. The problem is how to construct a pricing model that supports these sorts of initiatives. CABI has not made up its mind; it offers its customers a choice between simultaneous user and FTE price scales. There is clearly an added value to the user in bringing disparate but relevant information types together in a single coherent product, or service, or portal. But how does one set a price to reflect such added value? And do libraries, as key navigators and facilitators, see such sites as being part of the range of services they offer their readers?

Damaging the library

In a survey of readers commissioned by Ingenta presented at a seminar in London in September 2001, a number of important issues about the ways readers use the literature were revealed:

- Only 16 per cent of readers use library premises to access electronic resources.
- Libraries are seen as the primary source of journals when the access mode is online by only one fifth of readers, compared with more than four-fifths for print.
- Document requests overlap subscriptions to a significant extent. Institutional subscribers appear to generate more document requests than non-subscribers. Our fears about document delivery adversely affecting subscriptions appear to be illusions.
- A quarter of the readers surveyed paid for articles personally by credit card. Whether or not this is reclaimed from employers, it is significant that personal expenditure is so high. The use of credit cards indicates the importance of convenience for the reader. Whatever the arrangements,

a significant proportion of readers found them to be incomplete or simply inconvenient at the time.

If libraries are regarded as being less central to meeting the information needs of readers than they were in the print environment, publishers are in trouble as well.

So it is in publishers' interests to become less dependent on academic and research libraries as the sole source of revenue. By selling journal articles or book chapters on a pay-per-view basis, by licensing document delivery services, and by licensing content to aggregators and re-publishers who can sell into markets that would never buy their own publications, they can extend the readership and generate revenue that helps keep the subscription price of the journal down.

Putting it all in the machine

Finally, I want to say a word about Digital Rights Management (DRM). DRM is seen both by publishers and by librarians as a way of policing and of prevention, instead of an enabling technology. Our appreciation of the opportunities it provides has lagged well behind the capabilities it puts in our hands.

At the heart of the new content management systems like Sealed Media and Adobe Content Server 3.0 is a method of encryption that allows the publisher to control in great detail specifically how users can access the content. It provides permanent protection; even after it has been distributed, access to the content can still be controlled. It enables a content owner to:

- distribute content to a defined readership or closed user group
- control and monitor access to sensitive business information
- offer value added services to members only.

These newer products are really end-to-end publishing services. They can be integrated with a publisher's production and distribution systems, or configured and enhanced for use by specific industries. Sealed Media's technology can accommodate up to 3,500 different rules at the same time. It can provide:

- a payment gateway included to process and collect payments;
- secure distribution of it online;
- application of different prices or rules to viewing, downloading or printing for different categories of user;
- the ability to operate different business models simultaneously;
- a fully integrated reporting function;
- the ability to offer added value to subscribers and other closed user groups;
- the potential to increase revenues by applying multiple access rules for each piece of content;
- the ability to adapt pricing after the content has been released;
- "try before you buy": the facility to enable consumers to preview the full text

The following illustrate the flexibility and the "enabling" characteristics of this technology with three very different examples:

- Taylor & Francis's eBookstore is designed to sell eBooks to individuals rather than libraries. It will contain 2,500 titles and is due to be in production this year. It will use the retail book trade as part of its distribution. It will sell complete books at a discount of 15-20% off the print price, and chapters or pages at 12c per page. It has packaged 180 book titles in education to be

available on annual subscription. It will also “rent” eBooks for periods from 7 to 365 days for 20% to 75% of the eBook purchase price in its “eSubscribe” service.

- European Case Clearing House at Cranfield University distributes case studies for management education. This has been paper-based: photocopy the required number and ship to customers in Business Schools and Universities worldwide. ECCH has now put these case studies into PDF on a server. Using DRM technology, ECCH can either e-mail an electronic master to a customer that is restricted to print – but not to download - a single copy for local duplication, or an electronic multiple which provides access to authorised students, both within a set time limit. The technology ensures that these high value case studies cannot be shared with colleagues, used beyond the specified time period or e-mailed on to other people.
- Haynes Publishing publishes car repair manuals now covering virtually the full ranges of car and motorcycle types available in the UK, USA and Australia, and sells them through car repair shops. Haynes has moved this product online. Customers can get instant online access to these manuals, choose and buy specific chapters and download them instantly. There is also a rental facility where customers who need short term advice can view for a predetermined time and can choose whether or not to save or print for an additional fee. The Haynes system, holds all transactions in its memory, so that it can advise a frequent customer at what point the whole manual can be purchased, rather than continuing to buy chapter-by-chapter.

What these new systems enable us to do is implement different usage rights for different prices, and to distinguish readily between different types of user – members, individuals, libraries, and library consortia. The publisher sets the rules in the system, and the machine does the rest. Detailed written agreements on usage terms become redundant.

The major obstacle to a wider implementation of this sort of content management software is the requirement to download a plug-in similar to the Adobe Acrobat Reader. We all curse plug-ins. We tolerate the Acrobat Reader because it is essential to open access to most of the literature now available online. To require the installation of other types of software to enable a technology that many librarians see as being designed to restrict what they can do with online content is a step too far. This is a marketing and PR problem, in that publishers have to persuade their library colleagues that it opens the door to new and cost-effective ways of doing business.

Nevertheless, it would be better if no plug-in were required. We need some form of standardization so that it could be pre-loaded with Netscape or Internet Explorer. It is unfortunately clear that we are nowhere near that stage yet.

I suspect that this overview of some different ways of pricing scholarly information leaves most questions unanswered. It may well raise new ones. There is no right price for scholarly information. The right price is the market price. But let us hear what my colleagues have to say.

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