

Costing and Pricing Models in Science and Technology Libraries : **Part 1: Cost Histories and Reactions**

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- economics of scholarly information
- inflation: the history and the factors
- data/charts
- library actions and publisher reactions
- changes in technology: online and enhancements
- the impact of electronic access on scholarly information
- pricing schemes and user user response
- impact of the different pricing schemes on producer revenues
- alternative E-journal projects
- peer review: OAI options and post-submission peer review distribution model
- future and hidden costs of electronic journals
- user desires and current services (NLP, visualizations, linking)
- examples of new products/services

ABSTRACT

In order to understand the present journal cost crisis it is necessary to view the historical basis of scientific and non-commercial information sharing and the accompanying commercial publishing infrastructure that developed. It is also necessary to review the changes in distribution technologies, the possible enhancements provided, the desired options by users, and the economic forces acting to shape the new distribution network. Finally, a variety of distribution models will be presented that retain the important peer-review process while reconsidering the economic considerations.

OVERVIEW/HISTORY OF PUBLISHING

In the beginning, gentlemen distributed scientific information altruistically as a result of their leisure observations. This was usually done as reports of amateur societies. Over time, there developed a professional position within institutions of education, and publication became necessary for tenure and promotion considerations. There was also pressure for recognition through serving on editorial boards of these new publication journals.

Even though most peer review remains free (or underwritten by universities as hidden costs), as institutional organizations spread throughout the world and the desire for immediate access

to the latest information grew, there were real costs that needed to be raised to support commercial typesetting and paper distribution networks. As these publications became commercially viable entities, focus shifted from author claims of novel ideas to publisher concerns about copyright issues. Articles contained ideas that were treated as commodities and required buy-back by the organizations that paid for the information producer efforts. In this way “non-trade/commercial” information became a commercial value. Even non-profit society publishers started skimming profits from publications in order to support other activities such as conference subsidies and educational sessions.

The commercial sale of ideas has continued to expand and fractionalize in direct proportion to the increasing number of working researchers and institutions of higher education and the increasing amount of data generated by computers. The recent past has seen the development of new small niche journals aimed at new and rapidly developing fields (chaos). Competition among commercial publishers has resulted in escalating prices and many failed journals. Recent mergers have resulted in ridiculous buy-out prices and even higher costs to subscribers in order to cover the unrealistic profit expectations of stockholders.

The major change to this system occurred as a direct result of new technologies. Internet communications reduced the lag time for preprints in certain fields (physics), which created a demand for faster publication from traditional journals. This resulted in publishers rushing all of their titles out in online formats (now PDF and HTML). There were additional costs involved in reformatting these typeset items into online versions. These added costs were added to the ever inflating paper distribution costs which are still required as we run parallel information systems. These expensive parallel cost systems will continue to be operated until the difficult issues of archiving are adequately addressed.

In addition to these real surcharges, averaging between 10-20% of the paper subscription costs, many new electronic tools (such as online databases of indexes and abstracts) compete for the same limited funds in these hard economic times. The early seed money has dried up for Electronic Tools initiatives.

USER DESIRES

WHAT DO USERS/READERS REALLY WANT?

- users want convenience
- users want links
- users want searching (across all publishers)
- users want current awareness services (a la Current Contents)
- users want instant access (immediate and free ILL)
- users want all titles (OhioLINK experience: education about costs and criteria)
- authors want easy creation requirements

WHAT DO AUTHORS/EDITORS WANT?

Editors starting to expect reasonable prices: demanding reductions or migrating entire Editorial Boards:

- Michael L Rosenzweig
Professor, Ecology and Evolutionary Biology
University of Arizona
Publisher & Editor-in-Chief, Evolutionary Ecology Research
Reclaiming What We Own: Expanding Competition in Scholarly Publishing
<http://www.evolutionary-ecology.com/citizen/reclaiming.html>

Organic Letters (not a migration, but a spin-off from existing competition)

PRICING SCHEMES

- cost recovery
- traditional subscriptions

- traditional subscriptions and page charges
- page charges decline due to short-term "free" alternatives

- Interlibrary Loan for minimal cooperative access (time delay limits practicality)

- consortial access reduces prices (online delivery technology)
- consortial access increases added-value through larger title base

- use-based pricing: once online statistics are available (accountability)

- differential pricing
- variety of approaches (next session)

- free servers for eprints (no peer review)
LANL Ginsparg arXiv.org
Harnad "free the scholarly material" proposal: returns peer review
BioMed Central (both peer review and public domain)
Euclid (both peer review and public domain) in mathematics and statistics
eprint Moderator Model (post publication peer review)
<http://www.library.yale.edu/scilib/modmodexplain.html>

- Tiered Model (next session)
The goal is to create a relatively simple, predictable, reviewable flat-rate budget scheme for quality STM items with market value AND support for the archiving of non-marketable (non-core) information items in relation to both local and global needs.

PUBLISHER IMPACTS AND REACTIONS

- loss of profit through consortial pressures
- increased user base through new consortial readers (eventual increased use)
- loss of editorial boards through competition (SPARC, societies)
- mergers and acquisitions (higher costs due to outrageous buy-out prices)
- crunch on smaller publishers through lower prices (and profit margins)
- strive for guaranteed revenue streams (no cancellations, recover personal copy costs)
- charge for archiving (at least access fees, often repurchasing of data)

ALTERNATIVE E-JOURNAL (+) PROJECTS

Alternatives to Commercial Systems:

ICAAP -- International Consortium for Alternative Academic Publication

Open Archive initiative

<http://www.openarchives.org/>

The Open Archives initiative is a forum to discuss and solve matters of interoperability between author self-archiving solutions, as a way to promote their global acceptance. The Santa Fe Convention for the Open Archives initiative presents a simple technical and organizational framework to support basic interoperability among e-print archives.

Interesting (and extreme) position:

Stevan Harnad, Professor of Cognitive Science, Department of Electronics and Computer Science, University of Southampton,

<http://cogsci.soton.ac.uk/~harnad/intpub.html>

Free at Last: The Future of Peer-Reviewed Journals

D-Lib Magazine Volume 5 Number 12 (December 1999) ISSN 1082-9873

<http://www.dlib.org/dlib/december99/12harnad.html>

Selected Example Alternative Dissemination Products:

- JSTOR (relies on traditional commercial subscriptions for production)
- SPARC (“relatively reduced” but still high commercial basis vs other online journals):
Organic Letters, BioOne
- HighWire (relies on traditional commercial subscriptions BUT offers free backfiles)
- ARLO, PRST-AB (page charges and direct subsidies)

- Project Euclid -- preprints, pub, peer review software overlay for independent journals in math and stats
- PubMed Central -- Electronic Publishing in the Life Sciences
- BioMed Central -- a full text initiative in the bio-med area (peer review and non-peer reviewed material)
- Urania -- overlay to integrated astrophysics materials

Selected Example Alternative Journal Products:

- arXive - free LANL eprint server (Ginsparg); with citation data
- Physical Review Special Topics - Accelerators and Beams
- New Journal of Physics - page charges
- ARLO, Acoustics Research Letters Online - page charges
- MRS Internet Journal of Nitride Semiconductor Research - page charges and subsidies
- Journal of High Energy Physics - subsidized/free online, paper requires a subscription
- Advances in Theoretical and Mathematical Physics - an overlay on part of the well-known LANL arXiv.org archives (selected peer reviewed articles from preprint server).

PEER REVIEW

Essential as an option, but should not exclude the one-stop identification of other good material, i.e. supplies vendors, related web pages, news items. Mechanism provides filtering, but there is a resulting time lag. Lag is reduced through technology, but requires more sophisticated authors.

Alternative approaches:

- ATMP, commercial overlay on the free arXiv.org eprint material - but a questionable long-term revenue basis
- Advances in Theoretical and Mathematical Physics
- my Moderator model (post-publication review; three methods to identify quality, a la Harnad and Open Archives)

Goal: remove commercial distribution wherever possible.

Question: why is the SPARC/ACS Organic Letters title still so expensive compared to other ejournals?

FUTURE AND HIDDEN COSTS

Costs related to infrastructure for seamless access (search protocols and validation)

First, technology issues:

Santa Fe Convention

standards: Dienst, DOI, formats. DTD, archiving

(strongly vs weakly structured systems)

or else isolated searching

but also we need to discuss enhanced features:

federated broadcast searching and linkage of preprints and publications,

SearchLight, which provides broadcast searching of many types of data, and which organizes results into categories, is found at <http://searchlight.cdlib.org/cgi-bin/searchlight>

enhanced (metadata) A&I searches:

context sensitive controlled vocabulary hierarchies

analysis tools (i.e. ISI Related Records)

options related to actual and practical user behaviors

visualization and metaphor search possibilities

Iodyne search interface (stateless drag and drop)

<http://www.canis.uiuc.edu/projects/medspace/iodynefig1.html> part of

CAINS research project

Pacific Northwest National Laboratory visualization technologies

<http://multimedia.pnl.gov:2080/infoviz/technologies.html#galaxies>

timeouts: when users jump from search sessions to full text and then to other full text, and then attempt to return to the original search session results (if they can even remember/find these) - we need better navigational prompts for historical session elements,

group behavior options,

shared commenting linked to full text.

storing favorite items across publishers (see the IoP's Axiom Virtual File Cabinet)

linkage between full text items

CrossRef may handle finding DOI (article identifiers), but still no VALIDATOR for particular users to prove valid access if legitimate users come from outside vendors (i.e. AOL)

which version of an article to access (i.e. Science from the publisher or through an aggregator depending upon the desire for HTML rather than pdf)