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NEW PARADIGMS IN SCHOLARLY PUBLICATION

An Interactive Qualifying Report
submitted to the faculty
of the
WORCESTER POLYTECHNIC INSTITUTE
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by

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Approved:

1. Scholarly Publication

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Abstract

For decades, increasing prices of scholarly journals have forced libraries to cut journal subscriptions. Recently there has been a shift from printed to electronic media in scholarly communication. After reviewing literature concerning the problem and interviewing library administrators, faculty members, graduate students, and figures in electronic scholarly publishing, we propose a system for use by scholarly societies that we believe will (1) enhance the exchange of scholarly ideas and (2) create an electronic journal based on online community review of manuscripts by society members. The idea of the proposed system was inspired by current web forum software.

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Chapter 1

Background

1.1 The Serials Crisis

Scholarly journals have existed since the Royal Society of London published the first one in 1665. For centuries, they existed as the communications of societies of scholars, so that those studying the same field could share and build on each other's findings. These society journals functioned by printing issues and physically sending them to the members of the society.

After World War II, however, there was an economic boon to the scientific community in the form of increased funding from the US government. In 1961, the government also began paying page charges for publication in not-for-profit journals. These grants also stimulated research, and, thus, an increase in publishing. Since this coincided with an increase in higher education (a threefold increase in Ph.D.'s every year from 1958 to 1968[12]), the increase in publications was even more drastic.

In this environment, commercial journals began to emerge and compete with the the previously established society journals. These new commercial journals frequently were specific to specialties rather than the more general fields that were already being handled by the established society journals.

To deal with the increase in both number of journals and published material, research universities increased their expenditures on journals. According to Thomas J. Walker, constant dollar expenditures on journals increased 150 percent between 1960 and 1970 at 12

major research libraries, and total number of journals increased 117 percent.[12]

This increase could not continue for very long, and soon the "serials crisis" arrived. The serials crisis refers to the fact that, since the 1970s, the price and number of scholarly journals has been sky-rocketing, far outweighing libraries' abilities to keep purchasing them. The Association of Research Libraries, or ARL, increased expenditures on serials by 124 percent from 1986 to 1998, yet purchased 7 percent fewer titles.[12]

1.1.1 Publishers as a Cause of the Crisis

Some explanations of the "serials crisis" focus on the role of commercial publishers in controlling scholarly journals. Comparing the increases in price of society-published to commercial journals does not show commercial scholarly publishing in a positive light. According to an entomologist, Thomas Walker, three random society-published entomology journals increased from 28 percent to 166 percent in cost, adjusted for inflation, from 1973 to 1993. In contrast, four random commercially published entomology journals increased 271 percent in cost on average in the same period. The differences in price cannot be attributed to more material being published by the commercial journals, either. More specifically, per square meter of material society-published journals were 14 percent the cost of commercial ones. Even more damning, an Economic Consulting Services, Inc. survey for ARL showed that publishers' profits increased between 40 percent and 137 percent from 1973 to 1987.[12]

In particular, the UK-based publishing conglomerate Reed Elsevier reported gross profits of £2 billion on sales of £3.4 billion, with operating expenses of £1.25 billion in 1996 [2]. In fact, both Reed Elsevier and Plenum show high profits relative to the periodical publishing industry as a whole; that is, these companies benefit by concentrating on highly lucrative sectors of scholarly and technical publication. These high net profits also translated into high returns on equity for investors. In comparison to companies listed in the S&P 500, scholarly publication companies Wolters Kluwer, Reed Elsevier, Plenum, and Wiley exceeded 482, 448, 361, and 302 companies, respectively, in their returns on equity for 1997. These companies also deal in non-scholarly publication, but with the exception of Wiley these companies have significantly higher margins of profit in their scholarly publication divisions.[13]

1.1.2 Libraries and the Serials Crisis

Another factor contributing to the serials crisis is the relative decline in library budgets. Library expenditures decreased by 10% as a share of total university spending from 1982 to 1992. This is not compatible with the continual increase in scholarly output. In addition, according to electronic publishing advocate Andrew Odlyzko, the publisher's revenue from each article is only approximately $4,000 on average, whereas other library costs such as paying for stack space, maintenance, etc. are around $8,000 per article.[9]

Regardless of the root causes of the serials crisis, libraries have been searching for a way out of the unpleasant predicament increasing journal costs and delivery budgets have placed them in. The ARL has started an initiative known as SPARC that seeks to find solutions to the problems of publication by letting librarians themselves coordinate publication efforts for their own communities, and encouraging a cooperative distribution network. [2] The success of such efforts, and the possible ways technology might be used in such efforts remain to be seen.

Libraries have been vigorously pursuing online access to journals as a solution to the problems of the old paradigm. What sort of stable arrangements between libraries and publishers will eventually be reached remains to be seen. Some journals offer access to their print and online versions bundled together. Some will sell either version on its own, some will not. Changes in the policies of journals are nothing new, as shown by our historical data collected from journal mastheads; according to that data societies and publishers often change their policies, for example bundling journals together or giving subscriptions free or discounted with membership, in addition to changing the prices (usually increasing them). Such continuous change is likely to continue until scholarly publishing reaches a new state where the current stresses on the groups involved will be alleviated.

1.2 The Search for Solutions

So far, there has been movement along several avenues toward a possible resolution of the crisis in scholarly publishing. Online access to journals is increasingly common, due both to print journals adding electronic access features and to the formation of new online-only

journals. These efforts attempt to translate scholarly publishing to an online paradigm with as few changes to the fundamental process as possible. This means that articles are submitted by authors for publication, reviewed by an editorial board, subjected to review by the submitter's peer scholars, and finally published, with the only major difference being their availability in an online format instead of or in addition to print.

There are also other possibilities for the reform of scholarly publication that significantly change the characteristics of the process of scholarly communication. One approach that has been in use in some areas of scholarship for quite some time is the distribution of 'e-prints' as discussed below.

1.2.1 Online Access to Print Journals

Some print journals have taken the step of offering subscribers online access to current articles. For instance, the Florida Entomological Society publishes their journal *Florida Entomologist (An International Journal for the Americas)* for free online. It takes the $3 per-page cost of posting the articles online out of the $45 per-page price it charges authors to publish in the print journal, and hosting is provided by the Florida Center for Library Automation. This is only one example. Almost every major journal now has an electronic version available.

However conventional publishers may not be exploiting the entire cost-reducing potential of electronic publishing. Most of the cost of publishing an article in a conventional journal come before the "first page" is produced. For example in 1995 a "typical" scholarly journal with 5,800 subscribers with 208 pages per average issue would spend $239,592 of processing an article, and only $131,837 for reproduction and $80,538 for distribution [11]. As conventional journals perform the same processing of articles regardless of the eventual means of publication, savings are not spectacular. Some have ventured that with all-electronic journals, however, costs can be reduced by 75% per page or more [4].

1.2.2 Online-only Journals

Other journals have sprung up that distribute their content solely online. One instance of this is the *Internet Journal of Chemistry*[5], which charges for subscriptions and uses password protection to limit full article access to subscribers.

One example of the obstacles facing online-only journals is the case of the journal the *Pediatrics*. Experimentally, a new online-only section was added to this journal, the highest impact clinical journal in that specific discipline. When authors who had published online were interviewed, one interviewee was the author of the highest cited online article (38 citations) which was also the fourth most cited overall for the journal. Instead of being enlightened as to the wonders of electronic publishing, the author considered choosing the online venue to be a major mistake. She was comparing the performance of her article (in citations) to one in the same area published in the major print journal *Nature Medicine* which received far more citations. In fact, though, it received more citations than the highest cited print article in *Pediatrics* in the same time period. The two journals are of two different types. One is oriented toward researchers, one toward clinicians. The author was comparing apples and oranges, and found a convenient scapegoat in the novel method of publication.[1]

1.2.3 E-prints

E-prints are an update of the preprint distribution idea that was enabled by the advent of xerography and dated from the mid-1970s. In this system, researchers send preprints of their articles through the mail to a network of other researchers. Large groups in the area of high-energy physics might spend $15,000 to $20,000 yearly to distribute photocopied pre-prints.

In August 1991, Paul Ginsparg brought this process to the electronic world by creating an e-print archive using the email address hep-th@xxx.lanl.gov. Physicists specializing in high energy particle theory would electronically submit preprints of articles which could then be retrieved by other researchers. Eventually access by the World Wide Web and FTP was added.[3]

The e-print solution, however, only applies to new articles. Technology is also being used

to provide electronic access to older, already published articles. JSTOR is a not-for-profit archive of non-current issues of certain print journals, some dating back to the seventeenth century. Each journal is scanned and converted to PDF format, which can be viewed by eligible users of JSTOR, such as students and faculty of participating universities.

Chapter 2

Procedure

After reviewing the literature concerning the present state of scholarly publication and the ongoing transition to electronic access, the next phase was to collect specific data on the problem. To this end, we conducted interviews with people involved in scholarly publication, collected some quantitative data on trends in dues/subscription costs of journals over time. Those that we contacted for interviews were administrators of local academic libraries, college professors, graduate students, and figures in electronic scholarly publishing.

2.1 Interviews

2.1.1 Library Personnel

Helen Shuster

First of all we interviewed Helen Shuster, director of the WPI library, in person. The WPI library has indeed felt the pinch of the serials crisis. Aside from staffing costs, which are the largest single item in the library budget, journal costs account for around 80% of the library budget. The library was in fact forced to cut journals for several years until WPI's president Parrish intervened to increase the journal budget.

The WPI library has been moving toward electronic journals more rapidly than we anticipated. In fact, Shuster forecast that within five years, nearly all scholarly journals will be electronic. Already the library subscribes to nearly 4000 full text electronic journals.

Libraries generally join in consortia to increase their buying power and gain access to more journals. WPI is part of a number of consortia. WPI joined SPARC 3 years ago.

Electronic usage has overtaken print in some fields like Computer Science. When either the print or online versions of a journal are available, the WPI library's policy is to drop the print subscription in favor of the online version. In a side note, electronic books are gaining ground on print books.

Online journals are also gaining in importance in comparison with print journals. One example is in organic chemistry, where the Internet Journal of Chemistry has overtaken the traditionally leading print journal in the field, Tetrahedron, in average citations per article.

WPI is also moving towards electronic availability of its own research. Currently there are 80 graduate theses available online. WPI also intends to institute the electronic submission and archival of undergraduate projects, but this presents greater difficulties because of their greater number and issues involving the rights of corporate sponsors to some of the information.

Gwen Arthur

In order to have information about conditions at a number of different academic libraries of various sorts, we also conducted an email interview with Gwen Arthur, the Library Director at Clark University, a college in Worcester that is more liberal arts oriented than WPI.

Arthur has also been able to observe the serials crisis firsthand, having worked full-time in academic libraries for sixteen years, 12 of them as a supervisor or administrator and 2 as a library director. By her account there has been an ongoing prices crisis in serials for almost that entire time, as well as during a period in the early 1990's when she worked as a science bibliographer.

The Clark Library budget is about 2.2 million dollars. Journal expenditures comprise 65% of the materials budget and 25% of the total. The majority of the journals budget is still spent on print but serial indexes/abstracting databases have already gone mostly electronic. As director Arthur must determine what new directions might need to be taken for journal subscriptions and collections as far as storage, electronic subscriptions, etc.

Most of Clark's electronic journals still come concurrently with print subscriptions or

as part of "aggregated" packages like the Lexis/Nexis Academic Universe or the Expanded Academic Index; however, Arthur has begun to see the pattern changing and expects to go to an electronic-only subscription basis soon with a few publishers, e. g. Project Muse through Johns Hopkins.

Unfortunately, pricing remains a problem. The Clark library is not really seeing reductions in subscriptions pricing because they are not in a completely electronic environment.

As publishers begin offering electronic access at reasonable costs with appropriate licensing (including ILL and archival rights) the administrators of the Clark Library want to move to an increasingly electronic environment for serials, but costs and licensing restrictions are among the issues impeding the process.

Exact statistics on what proportion of journal accesses at Clark are electronic are not available. It is known that their "aggregated" databases are very popular; however they are not considered "electronic journals" but rather indexing and abstracting tools with selected full-text journals attached. Student and faculty interest mandates more electronically accessible products, and the library would like to see appropriate and affordable subscription pricing models develop.

When asked about the root causes of the rise of journal prices, Arthur flatly stated that the increase is due to the pricing policies of "commercial, for-profit publishers" who have taken over "scientific and scholarly journals" over the past twenty years.

Arthur hopes to see increases in the journals budget to avoid further cancellations, as well as better university funding for electronic journals in the materials budget. The Clark library will continue to use document delivery vendors like Ingenta and CISTI. Given many users' interest in electronic journals, Clark expects to move to an increasingly-electronic environment, but the move is not progressing as quickly as some might like because the library administration is waiting for more appropriate and affordable subscription pricing models to develop. In addition, some Clark users still prefer print, and the library will need to work with these users during the transition.

Clark's theses and dissertations are archived by traditional means, and making them available electronically has not been discussed yet.

When asked how the academic library of the future might differ from that of the present,

Arthur predicted an increasingly electronic journals system, but said that the future of electronic books was uncertain. Arthur is also concerned about the availability of scholarly information at reasonable prices. She sees a couple of possibilities for the future of electronic publishing: one where "public and non-profit cultural and educational institutions like colleges and libraries– as well as ...governmental bodies–will be able to develop and support successful models for providing affordable and/or subsidized information such as we have seen in the print environment (via libraries), thus supporting some of the information access that our democratic society has come to expect"; and an alternate future where "we will increasingly see a nation of information haves and have-nots as the commercial publishers establish monopolistic control of digital information, continue to increase serials prices over inflation, dampen Fair Use and resource-sharing mechanisms developed in the print environment, and in some cases, sell only access rather than content".

2.1.2 Faculty

Based on some tips from Helen Shuster as to which members of the WPI faculty would have the most to say on the subject of our project, we obtained interviews with professors George Phillies, Kristin Wobbe, and Dave Adams, of the Physics, Chemistry, and Biology Departments at WPI, respectively.

George Phillies

Prof. Phillies was not terribly enthusiastic on the subject of electronic scholarly publication. Phillies has a substantial list of published articles to his credit, a few of which are available online. He also has published a textbook for statistical physics in hard cover, a science-fiction novel available in trade paperback or several online formats, with a book on libertarian politics and one of science fiction short stories (and an epic poem) available only in electronic form.

Phillies considers electronic publication to be well-suited to speculative works that would not bear a printing of economically feasible size. For research, Phillies advocates systematic search through the back issues of journals as the method of choice. This way, he says, one

finds things that would have been relevant to one's research but that one would have missed had one merely searched for online resources.

Another problem is that relevant research from the past could be easily missed. He cited as an example a case where researchers at MIT were looking into an interesting physics problem, and found archived away in the library an undergraduate research project concerning more or less the same problem, over a hundred years old, rendered in elegant Spencerian script.

Phillies called into question the adequacy of the WPI library facilities. For example much of the space in the library building is used for purposes other than the storage and maintenance of books and journals. Space is instead used for such purposes as small cubicles for studying or group meetings upstairs, for the "Movie Lab" on the ground floor, and for things like the Mass. Academy (formerly) or the Computer Science Annex and Help desk on the lower levels. He definitely has a point here.

Phillies is concerned that it in the Library's efforts to reduce monetary and spatial requirements they are neglecting the duty of providing access to key scholarly journals. He cited the example of "Physical Review Letters" evidently an important journal in Physics. He was under the impression that the library had moved to an electronic-only subscription, when they could have just as easily subscribed to the print version as well for little or no additional expense. Preliminary investigation of the library stacks revealed recent print copies of "Physical Review Letters", but Library policy on the matter in the past was not looked into, so it is possible that Prof. Phillies information was merely out of date.

Phillies also pointed us toward an IQP that he had advised appraising the quality of the WPI Mechanical Engineering program, which contains data ranking the number of volumes in the WPI library and library expenditures against other schools.

Kristin Wobbe

The next interview we conducted was with professor Kristin Wobbe of the Chemistry and Biochemistry department.

Prof. Wobbe far prefers reading actual paper over reading a screen. Nowadays her research is usually done by printing out articles found electronically. She also mentioned

that the quality of pages printed by a laser printer is far greater than those produced by Xeroxing a book. In her six years at WPI, the library's selection of journals has expanded by a huge amount, mostly due to electronically available journals. Although one thing that she misses about print journals is browsing through the shelves, free to notice an interesting title or cover graphic, the convenience of being able to look up articles anytime without having to go to the library far outweighs this.

Electronic journals don't eliminate paper but they reduce its usage because a given person may print a few articles rather than browsing through an entire printed journal issue.

Other benefits of publishing electronically are the availability of datasets in their entirety that would be far too large and unwieldy for print. In electronic publishing other multimedia options are available. For example, authors could include video clips showing how an experiment was done; but unfortunately this isn't done much, if at all, yet. One problem with electronic publishing is that journals rarely have material from before 1985 available online.

Prof. Wobbe has published only in print-focused journals because they are better known, have better reputations, and she hasn't ever needed the extended capabilities of electronic publishing.

Dave Adams

The next interview we conducted was with professor David Adams of the Biology and Biotechnology department.

Adams has had a number of publications, most significantly a paper on an Alzheimer's gene in mice that made the cover of "Nature" and was the third most-cited paper in 1995. When asked his opinion on electronic publishing he recalls that 10 years or so ago, electronic distribution was mainly restricted to equation and text-oriented fields like math, physics, and computer science. Only recently have graphics capabilities improved to allow for electronic publishing for fields like biology, where images are often key (electrophoresis gels, microscopy, etc.). He now uses electronic journals on a regular basis. Unlike many others he doesn't feel the need to print them and is quite comfortable with images on the screen. His more advanced classes are taught exclusively with articles rather than textbooks. He uploads

articles to the space on myWPI reserved for class documents. This is a definite improvement over the old days when he had to drive to Kinko's, sign a waiver for copyright purposes, and make a large number of copies.

Presently, all the major biology journals have electronic as well as print versions. Nowadays reputable labs are often self-publishing online results rather going through journals. This is somewhat analogous to the pre-print system in physics. Refereeing is often done through email, and is far faster. Also it once was required to mail a hard copy to the publisher to be typeset manually, which introduced an estimated 10 times more errors than are present in electronically handled documents. Publishing is also much faster now, once response time from publishers was 3-4 weeks, now it is significantly less.

Professor Adams has never published in a pure electronic journal. All-electronic journals simply don't have large enough audiences yet to give the work maximum impact. It remains a possibility that he might publish in an all-electronic journal within a time as short as one year. Convenience is shifting audiences inexorably toward electronic journals.

He used to go to U-Mass Medical School weekly. Now he goes about once a year, because so much of their resources are available online. He mentions that historically when he referred students to "the library", he was referring to the U-Mass Medical Library, not the WPI library, which is terrible for biology.

2.1.3 Graduate Students

We also decided to interview a few graduate students in person. There were a number of reasons for this. For one, graduate students as well as professors consult scholarly journals as part of doing research and sometimes publish themselves. In addition, one of the questions for this project has been the state of scholarly publication not just in America (which is what most of the information we had gathered was primarily concerned with) but also around the world. A great many WPI graduate students are from abroad, so it seemed we could get at least a small bit of qualitative data on these matters. Our Advisor, professor Petruccelli asked a number of grad students if they would agree to brief interviews. Three of them consented, Ning Liu, Yamini Nanagiri, and Pam Gao.

Ning Liu

Ning stated that when doing research she generally looks online when she is looking for fairly specific information. Otherwise she uses the library's print-journal resources. Like many others, she prefers to print out articles found online rather than read text on a screen. Personally, she has published a marketing survey in a Chinese newspaper which also appeared on a web site.

This isn't common though, and requires good connections at the newspaper. This was in the course of 2 years she spent doing market research for Proctor & Gamble in China. Her undergraduate work was done at Beijing Polytechnic Institute. It was a very large school, so the library was quite good, including the journal resources. The computing and Internet resources were not very good, though.

Yamini Nanagiri

Yamini is a PhD student in Civil Engineering. When doing research she usually finds what she needs through the library's electronic journal resources. She hasn't published in a journal but has submitted a paper for a symposium and done one for the Department of Transportation. These are not available online but might be at some point in the future. She did her undergraduate work at one of the better schools in her state in India. The library resources were fairly good, but she did not use them much or do much research as an undergraduate.

Pam Gao

Pan (or Pam) is a graduate student in Financial Mathematics. She did undergraduate work in China, then obtained a master's degree in the United States and is now working on a second master's degree. She attended a university in Beijing of five or six thousand people. When working on her undergraduate degree she did not use the library resources much. In China books are far cheaper so bookstores detract somewhat from usage that might go to libraries elsewhere. When doing research she generally uses the web and will print most things out. She searches for topics or checks a few sites that are generally good for what she is looking for. She refers to the WPI library as not very helpful and the journal selection as

out of date. She hasn't published herself, but hopes to in the future. She would publish in a paper-oriented journal because it is more standard.

Conclusions from Grad Student Interviews

On the whole the interviews of graduate students did not bear as much fruit as those of faculty, but it was still worthwhile to have conducted them. The main points gathered overall from talking to them were a general preference for the greater convenience of online journals, and that the size of a university will often outweigh most other factors in determining the quality of serials resources.

2.1.4 Figures in Publishing

It was also decided that some specific questions should be asked of some of the figures in electronic scholarly publishing whose work we encountered often while reviewing literature for the project. We selected Steven Harnad and Andrew Odlyzko to send a few questions to via email.

They were asked first of all their opinion on the problem of back-content of journals as the transition to electronic availability continues. They were also given a brief description of our best hypothetical model for solving some of the problems of scholarly publication and asked to comment briefly.

Steven Harnad

Steven Harnad is an advocate of scholarly materials being freely available online. He coined the term "scholarly skywriting" for a new model of scholarly communication, where there is a continuum between unrefereed pre-prints and archives of refereed reprints, available free of charge because scholars seek readers, not dollars.

In response to our questions, Harnad suggested that the pressures of demand for online content makes digitization of even the back issues inevitable, and that a more important question is whether access will eventually be free or fee-based.

His response to our contribution (a proposal for a kuro5hinesque model of publication

adapted for use by scholarly societies, as described in the Solutions section) was fairly skeptical. He commented that such things have been: "proposed by many, tried by few, successfully implemented by none, and has many reasons it is unlikely to maintain quality, if and when it is ever tested on a representative enough sample, long enough to be able to draw any conclusions."

Andrew Odlyzko

Andrew Odlyzko has published quite a few articles on the subject of scholarly publication and the transition to electronic journals, all available online, as are a good number of his articles concerning mathematics and technology more generally. His works are widely cited in articles that we have read. In contrast to Harnad's advocacy of a less formal paradigm of "scholarly skywriting", Odlyzko insists that remaining true to the existing system of rigorous peer review is necessary for electronic journals.

Odlyzko says that digitization of back issues is not as expensive or difficult as thought by many, and is likewise inevitable.

On the subject of our proposed kuro5hinesque forum, he says that he has discussed such solutions in a number of his previous articles. In "Tragic loss or good riddance?" [7], he discusses a possible system where preprints are submitted electronically, subjected to a formal review process, and then made viewable by researchers according to their own criteria of filtering for credibility. He also proposes that readily available pre-prints will make a shift to the electronic paradigm inevitable, because when faced with limited funding academic institutions will always choose to rely on free or inexpensive electronic resources rather than to cut staff.He predicts that such developments will be slow, however[8], because of reluctance to depart from established practices.

2.2 Dues/Subscription Data

Another question that arose was whether the dues payments required in journal publishing scholarly societies have increased over time as radically as journal prices have. To answer that question, and the question of what dues and subscription revenue of the various societies

were used for, it was decided that some primary data would be gathered.

2.2.1 Selecting the Sample

For the sample we selected a number of scholarly societies from the scholarly societies section of a print index of American societies and from an online list maintained as part of the Scholarly Societies Project: http://www.scholarly-societies.org. A good spread across disciplines was sought. A total of about twenty societies were selected.

2.2.2 Collecting the Data

Phone Calls and Email

The societies were initially phoned whenever possible. Often the people we reached directly this way were not those most qualified to provide the answers we were looking for, but the email address of someone who was was obtained.

These email addresses were compiled into a list along with the contact email addresses of societies that we could not reach by phone (or didn't want to reach by phone in the case of a few Britain-based societies) and our requests for data were sent to them.

We received replies from only a few societies out of the sample. A couple claimed the task of gathering data was too onerous or that they were not they were not authorized to divulge such information. A few sent us data via email reply. There were also some responses to the question of what uses dues and subscription revenues were put to that did not include price data. The consensus of these replies was that sometimes dues are used for publishing, but journal subscription monies are not put to any other uses by the societies.

All email replies are presented in Appendix A.

Journal Mast heads

One email reply from a scholarly society functionary stated that for them to dig up their subscription data over time would be simply too much effort, the data being buried in some seldom accessed archive. They suggested instead that we pull subscription and dues data from the mast heads of journal back issues, a suggestion we followed.

We selected some journals carried by the WPI library to gather this data from. Some were published by societies present in our phone/email sample set, but the library did not carry the journals of many societies of the earlier group. In their stead society-published journals distributed across a good range of disciplines were selected.

The data collected is presented in full in Appendix B.

2.2.3 Analyzing the Data

In all, data was collected for the dues of four scholarly societies and the subscription prices of four society-published journals. The societies were the Electrochemical Society (ECS), the Association for Computing Machinery (ACM), the American Statistical Association (ASA), and the American Academy of Political and Social Science (AAPSS). The Journals were the Journal of the Electrochemical Society (JECS), the Journal of the American Chemical Society (JACS), the Communications of the ACM (CACM), and Physical Review (PR). Information about the Electrochemical Society and its journal came from an reply to our query by email. All other data comes from sampling journal mastheads for odd-numbered years.

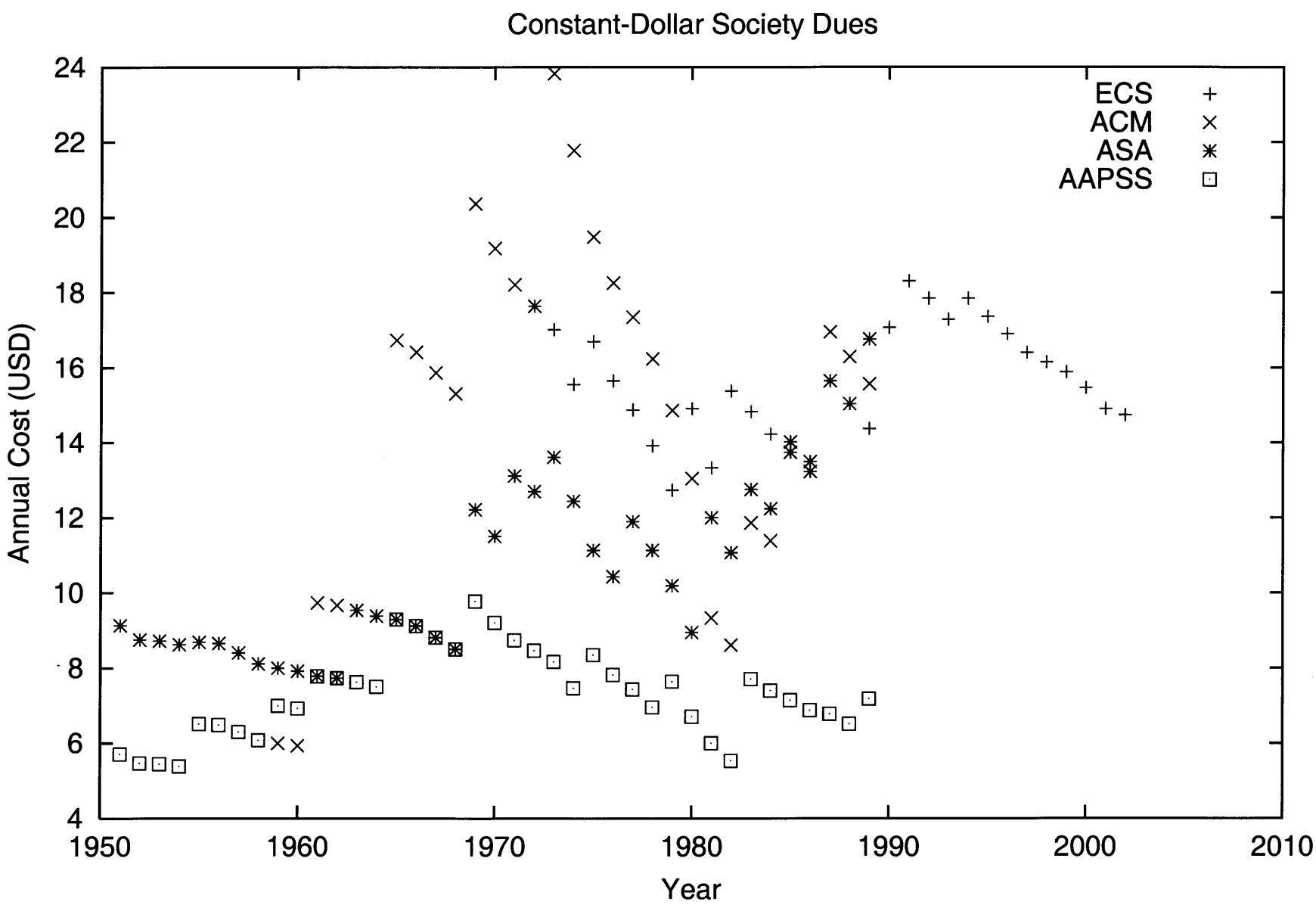
The earliest data points are for the year 1951, the latest are for 2002. Most data sets begin with the year 1959. The 1970s and 1980s, when the "serials crisis" is said to have been at its height, are well covered. Cursory examination of the data seems to show a continual upward trend in dues and prices. However when the data is readjusted by the Consumer Price Index to constant dollars, the upward trends are not nearly as pronounced. The slight upward trend in the prices of society-published journals reflects Thomas J. Walker's findings. The society-published journals in Walker's sample increased by 94 percent from 1973 to 1993. In comparison, Walker found that commercially published journals constant-dollar price increased an average of 217 percent in the same period.[12]

Among the society-published journals, only the Physical Review shows a truly radical increase in price. This coincides with a period when the journal increased drastically in size, and was in fact split into several sections. The other journals show upward trends over time; the next largest increase is by the JECS, which increases from 40 1959 USD in 1972 to 682 USD in 2002. We do not have an explanation for this large increase in price. The CACM

increases in price by a factor slightly greater than four from 1959 to 1989. This period begins when the journal had just begun, and ends when it had become one of the most important publications in the field of computer science.

The dues of societies seem to exhibit a pattern: they are periodically increased by a sizable amount, but after each increase, inflation causes the actual constant-dollar value of the dues to decrease, until the next hike in dues. Over the intervals for which data was collected, three of the journals exhibit distinct upward trends in dues, while the ECS's dues remain mostly constant, cycling between 12 and 18 1959 USD. Just as the CACM shows a distinct increase in price over the period, dues for the ACM also exhibit a notable upward trend. From this small sample, the conclusion we can draw is that dues generally tend to remain fairly stable, but tend to increase as a society gains in importance within its field.

Some drawbacks with our methods of collecting and analyzing data are the rather small size of the sample and the fact that certain other data were not also collected, such as the circulation figures for these journals for the time period in question. In addition, the total body data from the journal mastheads also exhibits certain irregularities, which for the sake of clarity were not included in the analysis of trends in dues and journal prices. Societies often changed their policies of what publications are bundled with membership, or institute more complex schemes of membership than were included in this analysis, for example membership and subscriptions are often available at discounted rates for students.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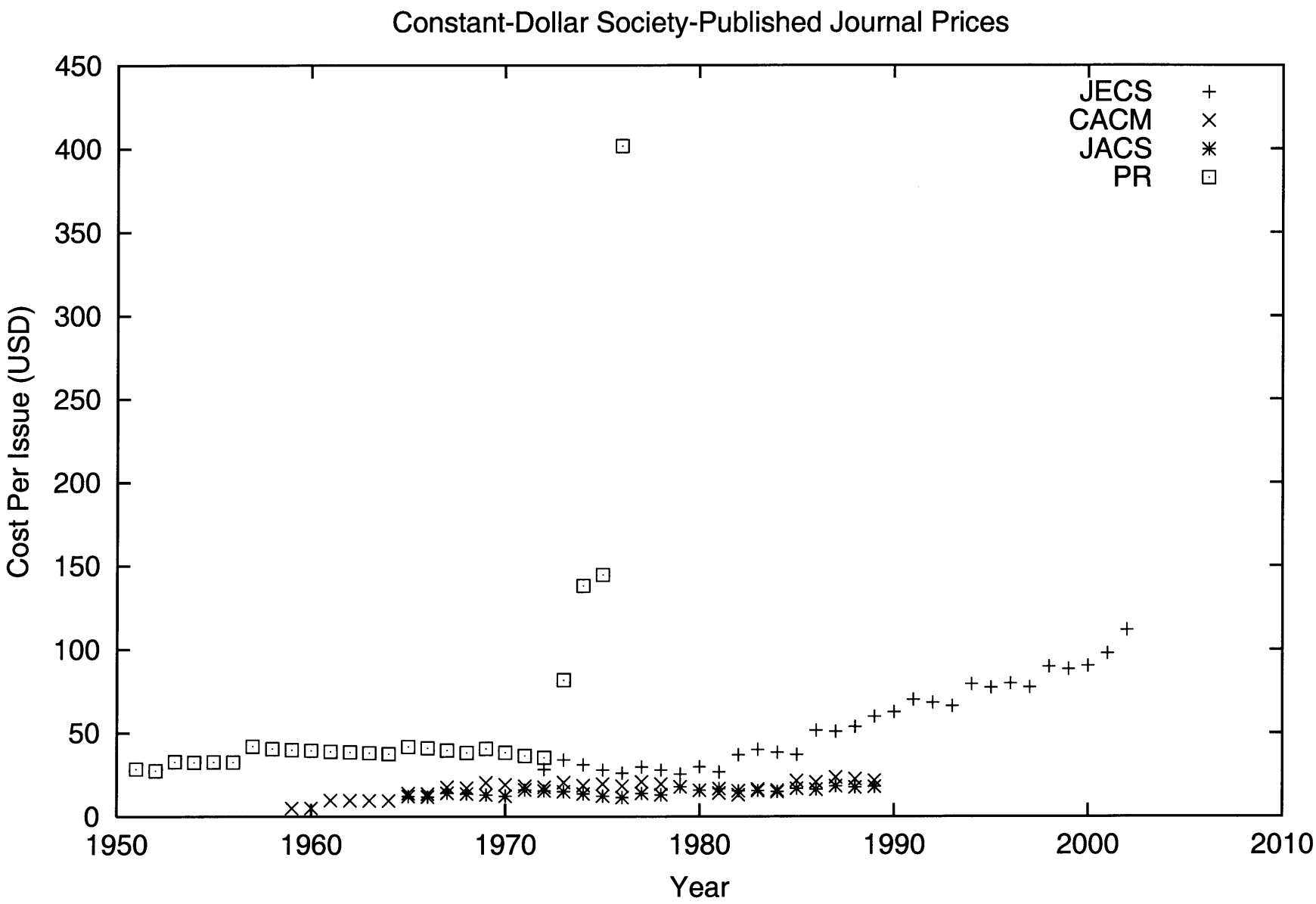
Constant-Dollar Society-Published Journal Prices
Cost Per Issue (USD)
Year
JECS
CACM
JACS
PR
0
50
100
150
200
250
300
350
400
450
1950
1960
1970
1980
1990
2000
2010

Chapter 3

Possible Solutions

3.1 The Problem of Centralization

One drawback of the current systems for scholarly publishing, both online and off, is that wherever any control over content is exerted, that control is completely centralized. All content must go through one group of people, who then control to whom the content is given, and when. Not only does this create a bottleneck of information, but it also puts significant responsibility in the hands of only a few people.

This responsibility, for editing, reviewing and distributing content could be handled by a large number of people giving a little responsibility to each member of the scholarly community, rather than giving all the responsibility to only a small group.

3.2 Models for Solving the Problem of Centralization

3.2.1 The Preprint Archive Model

This is the model used by Paul Ginsparg of the ArXiv (formerly the infamous XXX archive at xxx.lanl.gov). In it, preprint versions of journal articles are posted online for download by interested parties. However, there is no peer review process, and little control over content.

3.2.2 The Slashdot/Kuro5hin Model

This model is used in many places on the World Wide Web, although not for scholarly publication, with some of the most prominent sites being slashdot.org and kuro5hin.org. In this model, the community works together to distill the mass of available information in the world into a coherent collection of articles.

Details of the Current Systems

Comments, Moderation and Story Queues On Kuro5hin, any user can suggest a article, which is then added to the article queue. At this point, other users can review the queue, moderating the articles as either of general interest, or of interest in a specific topic area. If an article receives enough moderation as being of general interest, it is posted on the main page at http://www.kuro5hin.org/. If it is of interest in a specific topic area, it is posted on the topic page, such as http://www.kuro5hin.org/section/culture or http://www.kuro5hin.org/section/tech. In addition to moderating, users can also attach comments to the article, notably including reasons for negative votes.

After it is sufficiently moderated, an article is either posted (to either the main page or to the appropriate topic page) or dumped. If it is dumped, an email is sent to the author, including all the comments and moderation that the article received while in the queue. The author can then edit the article, considering all the comments, and resubmit it.

In contrast, Slashdot has paid editors, who read the article queue, accepting and rejecting articles as they see fit. Outside of the body of editors, nobody even has access to the article queue. Comments, however, work similarly to Kuro5hin, in that anyone can post comments, and other registered users can moderate them.

Karma and Mojo Kuro5hin and Slashdot each have a system designed to keep track of how "good" a user is. Slashdot's karma system keeps track of how many times a user's comments have been moderated, increasing by 1 on positive moderation, and decreasing by 1 on negative moderation.[10] Kuro5hin's mojo system keeps a time-weighted average of the scores a user's comments have received over time.[6] In both cases, having a higher karma/mojo will allow a user to post comments at a higher initial score, so that they will

be more likely to be seen by visitors to the site. With Slashdot, this is done by giving users with high karma the ability to post comments with a score of 2, rather than the usual 1 for logged-in users and 0 for anonymous posters. On Kuro5hin, the initial score of a comment is equal to the mojo of the poster, with an initial score of 0 out of 5 when the user's comment's haven't received any moderation.

Parallels with Scholarly Publishing

Drawing a parallel between these models and traditional scholarly publishing, the users of the Kuro5hin-like site are analogous to members of the scholarly community. They write articles, which are then moderated and comment upon by other users. However, both Kuro5hin and Slashdot, as well as essentially every other similar site, allow anybody to set up accounts, requiring only a valid email address. There is nothing to verify that users have any relevant qualifications, or even that they are who they say they are. (assuming that they even bother to say who they are in the first place!)

Similarly, the site's main page is like a general journal for a topic, such as "Communications of the ACM" would be to computer science. The individual topic pages are similar to the more specific journals, such as the ACM's "Distributed Computing," since the main page provides an overview of the best articles, and the topic pages would list more articles for those that want more information on specific subsections of the general topic.

Karma, despite its flaws, would be roughly representative of an individual's reputation in the scholarly community. Since it is only a single numerical representation, it is inherently unable to fairly represent the user–the user's skill set and knowledge cannot be accurately reduced to a number, or even a series of numbers. Additionally, were we to venture far enough to suggest that karma could be a valuable measure of a person's worth in the general field, it shows little of which subtopics that person is qualified in.

The article queue and moderation process is analogous to the peer review process. Articles are written and put into the queue, at which time other users can read the article, comment on it and rate its value to the community. The article is either accepted or rejected, and upon its rejection, the author receives a summary of the comments on how the article could be improved.

Advantages and Disadvantages

This approach to scholarly publication eliminates the major concern of centralized control of scholarly knowledge, but there is still some centralization, since it still requires a central site to maintain the information. However, much of the work of the editorial body has now been distributed to members of the community.

Still, placing responsibility in the hands of users can be risky. There is potential for the abuse of power in the moderation system, as well as potential for flames, trolls, spam and other garbage posts within the comments system and the article queue.

Refining the Model – Use by a Society

Because of the potential for abuse, this model couldn't be applied to a public community. However, for a scholarly society, the idea remains viable. If each user account is tied to a society membership, users are more accountable for the content that they produce. If a user were to abuse the system, it could be appropriately dealt with by the society (for instance, temporarily revoking that user's account).

Additionally, the nature of such a site would vary drastically from that of Slashdot or Kuro5hin. Both of those sites exist to foster public discourse on society, technology, or any other appropriate topic. Both sites are proponents of free and anonymous speech. Scholarly communication, on the other hand, is dependent on the idea of having a forum in which new ideas can be discussed intelligently and coherently. Since only society members (presumably knowledgeable about the topic at hand) could participate in these forums, the quality of conversation would be elevated to that which users would desire from scholarly communication. This forum could be used to share abstracts, publish full articles, or exchange ideas.

At the same time, as users become more accountable, the sense of anonymity to which many Internet users have become accustomed is eroded. On sites like Kuro5hin and Slashdot, rarely is anything more than a valid email address required to create an account, and many users like it this way. In contrast, members of the existing scholarly publishing community are used to publishing with their names attached to their work, and demand credit for their accomplishments. Should a situation come up where anonymity is necessary, that would be

the failing of this model, although it is entirely possible for something to be worked out in private with the society or the administrator of the site.

However, this is not to say that anonymity need be completely destroyed. Just because users are accountable to administrators does not indicate that they need to be identifiable to all other users of the system. Many existing journals blind reviewers to the identity of the author whose work they are reviewing. It would be trivial to create an analogous system in this model in which authorship is not revealed for articles in the queue. It would also be possible to hide the identities of authors after an article is accepted, but authors might resent not receiving direct credit for their work. At most, anonymity in accepted articles could be left as an option.

The moderation system could then be used as a form of peer review. There would be no way to have the fine-grained control of asking specific people to review, but it could provide a passable system. However, it is questionable as to whether all users should be allowed to moderate any article in the queue. There is potential there for people to review articles on topics which they know little about. To solve this problem, subareas of expertise could be established, and members allowed to moderate only in areas in which they are qualified.

If the review system worked properly, it would sort out the best articles in the queue, providing a potentially valuable journal. However, given the less structured reviewing system, it is unlikely that the resulting journal would be of the highest quality, at the level of *Nature* or *Science.*

While the system would not produce a flagship journal for the society, it would be an entirely new species; it would be a community in which users could discuss new ideas or research. Rather than one-way communication in which articles are simply published for others to read, this system offers a means for discourse among peers.

3.2.3 The Freenet/Publius Model

Freenet and Publius are experimental systems being developed mainly to provide means of publication resistant to censorship. They both provide facilities for the anonymous submission and retrieval of documents. The main differences between the systems from a user's standpoint are that Publius is more oriented toward purely textual documents, as there is a

100 kilobyte limit on submissions, whereas the Freenet project is intended by its idealistic originators for the distribution of all sorts of files, and that whereas Freenet requires a special client written in Java to be accessed, Publius can be accessed directly through web proxy servers.

Both systems make use of public key encryption and proxying to implement the anonymity-ensuring features of the system. In both cases cryptographic signing features are intended to be available for the publishers of documents, to ensure that what a user publishes with one signature can be verified to be from one source (though in theory the identity of that source in real life can remain completely anonymous) and to have remained unmodified since its submission. Freenet is intended to be searchable eventually, but in its present state of completion data must be retrieved using periodically compiled lists of keys. Publius is intended to be eventually composed of a distributed, flexible network of servers, but as of now there is a set list of servers for users to connect to for demonstration of the system.

The advantages of the Freenet/Publius model for scholarly publication would be that the facilities for maintaining the documents would be completely decentralized. There would also be no direct costs to users, as the servers would presumably be maintained by a large network of volunteers. Volunteers would be able to set limits on the amount of system resources used by their Freenet node, and with the ever-lowering costs of memory, storage, and processing power, they will not be making a huge sacrifice. Volunteers will likely be motivated by sympathy with the goals of such projects as Freenet and Publius, that is, the free distribution of information in a manner that circumvents censorship and allows for anonymity. Another factor could be a sense of cooperation, if they themselves benefit from the network of nodes. Freenet in addition has as one of its prospective advantages a feature that documents will naturally migrate to the servers from which requests can most efficiently be serviced. Both systems have the capability of distributing web-like content, that is hypertext files with hyperlinks, as well as formats like TeX, PDF, and postscript, that are most commonly used for distributing scholarly articles electronically.

The disadvantages of this sort of model for scholarly publication are that there is no real control of such a system. An individual can have a hierarchical portion of the namespace within such a system to him or her, but among the key aspects of scholarly publication

is communication between different researchers, and the openness and anonymity of these systems make this very hard to regulate. In other words, there is little to no way to prevent trolls, flames, spam, and like noise from clogging the channels of discussion.

3.3 Which Model is Best?

Overall, it seems that a kuro5hin-like model would be the best overall model out of those discussed here for solving the problems of distributing scholarly information. Systems of this sort have already had some success as venues for discussion of news and technical topics for a number of years.

The pre-print model is well suited to some niches within scholarly publication; for example in areas where some research is considered to be relevant to all researchers in that area. Not all researchers have access to the most powerful accelerators for high-energy physics experimentation, or can run the most expensive biological experiments. The pre-print model allows laboratories and individual researchers to rapidly and cheaply distribute their findings to a wide audience of fellow researchers and the public at large. However the key element of peer-review is conspicuously absent from this model.

The Publius and Freenet models have the advantage of being truly distributed, decentralized systems. However their original purpose is mainly to circumvent censorship, not to solve the problems of scholarly publication. Making use of them for such purposes is very likely overkill, especially since they are both still very much experimental systems. In addition, they would provide very little control over the relevance of information in interactive scholarly discussions. The enforced anonymity provided by these systems also would hamper their use for scholarly publication purposes, as the credentials of authors and reviewers are a definite consideration in the preliminary evaluation of what they have to say.

Systems based on the Kuro5hin model, when implemented for a scholarly society, can be controlled relatively easily by only a few people. In these communities, the users could be held responsible for their comments, yet the ideas could be allowed to flow freely. Maintaining the site would also be significantly easier than running a more traditional journal, since the Kuro5in model requires minimal staff (the same small group of administrators could probably

even run several such sites.)

While the Kuro5hin model does not completely solve the problems of centralization, it comes close, and societies can prevent the problems created by the total decentralization of the Freenet/Publius model. There is no editorial board necessary, because the users will distill the best information available. The scholarly community will determine for itself what information is worthy of publication, and to what audience it is presented. No editorial board is necessary to filter the flow of information, and there is little expense in disseminating the information itself, as nothing needs to be printed or physically shipped. It has the potential to produce a journal-quality collection of articles at very little cost.

Unfortunately this solution has the same flaws as any solution to the problem of centralization. It is dependent on the community working together. Petty disagreements among community members and even differences of opinion about what is suitable for publication have the potential to severely detract from the quality of the journal. If the community ceases to work together toward good quality scholarly communication, they will suffer for it. The noise of conflicts would drown out any useful comments people might make. This is why the model must be applied to a society. A scholarly society would tend to avoid the trolls and flames of the typical non-scholarly forum. Additionally, the accountability of the users discourages such activities. This should keep the signal to noise ratio high enough that the few (if any) remaining problem users could be easily dealt with.

Chapter 4

Conclusions

The advancement of technology over the past few decades has made it easier to disseminate scholarly data. While journals have frequently demanded the copyrights on the articles which they publish, many authors have, in defiance, released pre-prints of their articles, either through the mail, or online. The XXX archives[1] provide a good example of this.

However, as long as journal publishers focus on their print journals, or analogous online subscription models, and demand copyrights, the flow of information is restrained. If they do not transfer copyrights to publishers, authors can reprint or distribute their articles however they please. However, there is far less economic motivation for publishers to publish journals without owning the copyrights, since they would simply be offering at a cost the same information that could be (and often is) available freely.

In order to preserve copyrights, yet stimulate the free flow of information, a new system needs to be put in place. Using a design inspired by the Kuro5hin web site, information could be distributed freely without abusing copyright. The communities would be able to donate their time to the site, eliminating the need for an editorial board, as well as saving printing and shipping costs. The remaining costs could be accounted for by taking them out of society dues.

This proposed model also offers some hope of lessening the problem of the serials crisis. If it is possible to obtain the articles one desires over the Internet, many journals would become unnecessary. However, the problem of prestige would still exist–people seek to

[1]Now ArXiv at http://www.arxiv.org

publish in a journal which is as highly reputed as possible. At first, these sites would appear as a novelty, a status which they must strive to overcome. Slowly building a reputation as a positive community discussion site would allow the site to grow into the medium for scholarly communication which it deserves to be.

However, this solution would not work as well for commercial journals, since it would need membership as a user base. Commercial journals would have to offer paid subscriptions to the site, which would inevitably end in failure. If the site was only visible to subscribers, then it would not be able to reach the audience that a publicly readable site would, and thus would be unappealing to authors. Because of the lack of authors, it would be difficult for such a journal to attract new subscribers willing to pay for the the content. Whereas, if the site was publicly readable, it would likely lack the appeal of a society site, since it would be redundant with the society's site.

The only way this model could be viable to a commercial publisher would be if it was the first on the market with the model, giving it an advantage over anybody coming later, whether it is by genuinely coming first or by carving a niche market, as many commercial journals currently do in the print media. While the Kuro5hin model offers a solid model for dissemination of information at a low cost, it offers little profit margin, especially in comparison to the historically large profits of commercial journal publishers.

By implementing the Kuro5hin model, societies would give authors means to freely communicate their findings to the public without violating publishers' copyrights, and offer them a means to discuss their ideas. Since society dues would pay for the site, and the information would be freely available to all, this model would offer some relief from the serials crisis.

Appendix A

Interviews

A.1 Gwen Arthur

From garthur@clarku.edu Sat Feb 16 19:00:13 2002
Date: Tue, 11 Dec 2001 14:44:57 -0500
From: Gwen Arthur <garthur@clarku.edu>
To: 'Geoff Greene' <ggreene@WPI.EDU>
Cc: Ben Lucas <blucas@WPI.EDU>
Subject: RE: Interview

Hello Geoff,

Hope you can still use this. It's been a very busy end of the semester here at Clark.

Let me know if you have further questions.

Gwen Arthur
Goddard Library

-----Original Message-----
From: Geoff Greene [mailto:ggreene@WPI.EDU]
Sent: Saturday, December 01, 2001 4:22 PM
To: Gwen Arthur
Cc: Ben Lucas
Subject: RE: Interview

yes, we are still working on our iqp. thank you for taking the time to respond to us. we really appreciate it.

the following are the basic questions that we have for you:

1. How long have you been involved in administering academic libraries? Clark's library?

   I've worked in academic libraries full-time for sixteen years, as a supervisor or administrator for about 12 years, as a director for 2.

   How much of the so called 'serials crisis' have you witnessed?

   The serials pricing crisis has been ongoing for virtually the entire time that I have been in academic libraries. I was a science bibliographer briefly in the early '90's, and the pricing problems were already critical then.

2. How closely do you work with the scholarly journals in the library? (i.e. subscriptions, storage, handling electronic subscriptions)

   As director I do not work with the technical maintenance of the subscriptions, but have a lot of involvement and communication with our faculty and our collections staff in terms of thinking about what constraints our periodical budget has, given serials pricing inflation; also in thinking and planning about what new directions we might need to take in terms of journal subscriptions and collections (storage, electronic subscriptions, etc).

3. Could you give us an estimate of the total library budget and the portion spent on journals?

   The budget is about 2.2 million, over 25%
   This is over 65%

   Of the portion spent on journals, how much is for hard copies, and how much is for electronic access?

   At Clark the majority of our journals budget is still spent on print. Our serial indexes/abstracting databases have mostly already gone electronic.

However, that is because most of the electronic journals or full-text we receive still come to us concurrently with our print subscriptions or come as part of "aggregated" packages like Lexis/Nexis Academic Universe or Expanded Academic Index. But we are starting to see that pattern changing, and have a few publishers whom we expect to go to an electronic-only subscription basis soon (like Project Muse through Johns Hopkins).

What are the trends in spending on journals?
How is spending on electronic journals changing relative to print journals?

Unfortunately, pricing remains a problem in the electronic environment just as it was in the print. We are not really seeing reductions in subscriptions pricing due to reduced costs in printing, because we are not in a completely electronic environment.

As we see publishers offering electronic access at reasonable costs with appropriate licensing (including ILL and archival rights), we want to move to an increasingly electronic serials environment. Costs and licensing restrictions are among the issues slowing us down.

4. What proportion of journal use at Clark now takes place electronically?

Proportion not available. We know that our "aggregated" databases are very popular; they contain some full-text of journals, but are not generally considered "electronic journals" per se, rather indexing and abstracting tools with selected full-text attached.

Again, as we see publishers offering electronic access at reasonable costs with appropriate licensing (including ILL and archival rights), we expect

to move increasingly to an increasingly electronic environment. Given

both student and
faculty interest in electronic journals and databases, we need to provide more access
to electronic products; we also would like to see appropriate
and affordable subscription pricing models developing.

5. In your opinion, what is the root cause of the price jumps in journals?

Over the past twenty years, takeover and pricing of much of
the scientific and scholarly journals by commercial, for-profit publishers.

6. What measures have been/will be tried for alleviating problems caused by increasing journal prices?

At my institution I hope we'll see budget increases focused on journal budget
lines to avoid further cancellations. We also will continue to use document
delivery vendors like Ingenta and CISTI.

7. Could you outline Clark's plans regarding electronic journals in the future?

Obtain better university funding to help us afford more of these in our materials
budget. Given many of our users' interest in electronic journals, we do expect to move
to an increasingly-electronic environment. We are not moving as quickly as some
of us might like because we are waiting for more appropriate and affordable
subscription pricing models to develop. Also, some of our Clark
users still prefer print, and so we will need to work with them during transition.

8. Are theses and dissertations at Clark handled electronically or through traditional means? Will this be changing in the future? If so, how? Right now, through traditional means. We haven't discussed making them available electronically yet.

9. How will the academic library of the future differ from what we have today?

It will certainly be increasingly electronic, particularly in the
journal area. It remains to be seen how quickly the public and libraries will
adopt electronic books: Internet book ventures like Questia and netLibrary are
not faring all that well--yet.

An important question for me as a librarian and educator is whether or not public
and non-profit cultural and educational institutions like colleges and libraries--
as well as public and governmental bodies--will be able to develop
and support successful models for providing affordable and/or subsidized information
such as we have seen in the print environment (via libraries), thus supporting
some of information access that our democratic society has come to expect

OR

if in a digital environment we will increasingly see a nation of information "haves" and
"have nots" as the commercial publishers establish monopolistic control of
digital information, continue to increase serials prices over inflation, dampen
Fair Use and resource-sharing mechanisms developed in the print environment, and in
some cases, sell only "access" rather than content.

Thank you again for taking the time to help us with our project!

On Fri, 30 Nov 2001, Gwen Arthur wrote:

> Dear Geoff,
>
> Apologies for the belatedness of this reply. With the holidays,
> and some other deadlines, I'm afraid your request got buried in a big
> pile of incoming emails!
>
> Are you still working on your IQP? If so, I'm happy to respond to
> your questions via email or in person.
>
> Gwen Arthur
> Goddard Library

A.2 Stevan Harnad

From harnad@cogprints.soton.ac.uk Tue Feb 19 02:20:55 2002
Date: Tue, 29 Jan 2002 09:16:58 +0000 (GMT)
From: Stevan Harnad <harnad@cogprints.soton.ac.uk>
To: Ben Lucas <blucas@WPI.EDU>, Geoff Greene <ggreene@WPI.EDU>
Subject: Re: Scholarly Publication Questions

On Tue, 29 Jan 2002, Ben Lucas wrote:

> We are students at Worcester Polytechnic Institute and are doing
> a project that is concerned with scholarly publication and the transition
> to electronic journals. We have come across articles you have authored in
> the course of researching this project and decided that we should ask you
> a few questions, as a figure in the online scholarly publishing community.
>
> 1. One criticism of electronic access to journals is that those taking
> advantage of the greater convenience of online research could miss
> information published before the advent of electronic access. In your
> opinion what is the most likely scenario for this issue being resolved?

The old (legacy) literature will be scanned and digitized and made
available online too. Journals are doing this, gradually. The JSTOR
projected, funded by the AW Mellon Foundation, is doing it for many
journals.

It is a foregone conclusion that the entire refereed journal literature
will be online soon. Most of it already as. The big question isn't
whether or when it will be online, but whether access will be for-fee or
for-free.

> 2. As a possible solution to some of the problems of scholarly
> publication, we are proposing a model of community-based publishing
> similar to such websites as kuro5hin.org, where articles are placed into a
> queue by anyone, and then posted either to a main page (analogous to a
> general purpose journal) or to subsections (analogous to more specialized
> journals). The articles will then be discussed by various users of the
> site. In your opinion, could a system like this work or would suffer too
> greatly from the lack of clarity concerning the qualifications of the
> users? If quality would suffer, what measures could be taken to prevent
> it?

This has been proposed by many, tried by few, successfully implemented
by none, and has many reasons it is unlikely to maintain quality, if
and when it is ever tested on a representative enough sample, long

enough to be able to draw any conclusions.

See:

http://www.cogsci.soton.ac.uk/~harnad/Hypermail/Amsci/0479.html
http://www.cogsci.soton.ac.uk/~harnad/Hypermail/Amsci/0479.html
http://www.princeton.edu/~harnad/nature2.html

Good luck on your project.

Stevan Harnad

> Thank you very much,
> Ben Lucas
> Geoff Greene
>
>
>

A.3 Andrew Odlyzko

From odlyzko@dtc.umn.edu Tue Feb 19 02:20:50 2002
Date: Sun, 3 Feb 2002 19:11:13 -0600
From: Andrew Odlyzko <odlyzko@dtc.umn.edu>
To: blucas@WPI.EDU, ggreene@WPI.EDU
Subject: Re: Scholarly Publication Questions

Sorry for the brief responses, but I have been swamped, and tomorrow
go off on a trip.

Best regards,
Andrew Odlyzko

From blucas@WPI.EDU Tue Jan 29 00:26:33 2002
Date: Tue, 29 Jan 2002 01:26:28 -0500 (EST)
From: Ben Lucas <blucas@WPI.EDU>, Geoff Greene <ggreene@WPI.EDU>
To: odlyzko@umn.edu
Subject: Scholarly Publication Questions

> We are students at Worcester Polytechnic Institute and are doing a project that is concerned with scholarly publication and the transition to electronic journals. We have come across articles you have authored in the course of researching this project and decided that we should ask you a few questions, as a figure in the online scholarly publishing community.
>
> 1. One criticism of electronic access to journals is that those taking advantage of the greater convenience of online research could miss information published before the advent of electronic access. In your opinion what is the most likely scenario for this issue being resolved?

I expect there will be great pressure to create digital version of old print publications. This conversion is not all that overwhelmingly expensive, and is likely to occur sooner and be more complete than most people seem to expect.

> 2. As a possible solution to some of the problems of scholarly publication, we are proposing a model of community-based publishing similar to such websites as kuro5hin.org, where articles are placed into a queue by anyone, and then posted either to a main page (analogous to a general purpose journal) or to subsections (analogous to more specialized journals). The articles will then be discussed by various users of the site. In your opinion, could a system like this work or would suffer too greatly from the lack of clarity concerning the qualifications of the users? If quality would suffer, what measures could be taken to prevent it?

Yes, that is one natural way for this process to work, and I discus such approaches in "Tragic loss ..." On the other hand, this is a departure from traditional approaches, and so is likely to develope slowly ("The slow evolution ...")

-----Please note new address-----

Andrew Odlyzko
University of Minnesota
Digital Technology Center
599 Walter Library
117 Pleasant St. SE
Minneapolis, MN 55455

odlyzko@umn.edu email
612-624-9510 voice phone
612-625-2002 fax

http://www.dtc.umn.edu/~odlyzko

Appendix B

Dues/Subscription Data

c=communications j=journal cs=communications/student price Communications & Journal of the ACM			
Year	Dues (USD)	Members (USD)	Non-members (USD)
59	6 includes	5 (both)	10 (both)
61	10 c&j	5 (each)	10 (each)
63	10 c&j	5 "	10 (each
65	18 c&j	7.50 "	15 (each)
67	18 c&j	7.50j, 10c	20c
69	25, 7.50	+3j, 12.50c	25c
71	25, 12.50	+7j, 12.50c	25j, 25c
73	35, 8	+7j	30j, 35c
75	35, 11	+7j	35j, 42c
77[1]	35, 11		42c
79	35, 11		42
81	28, 9		42
83	40, 13		55
85	50, 15		78
87	65, 30 wc	30c	90
89	65, 30 wc	30c, 20cs	90

na=north america usa=usa c=corporate i=institutional Journal of the American Statistical Association			
	Dues (USD)	Journal prices	
Year	Regular/Student	Members	Institutions
51	8	5,4	100i
53	8	5,4	100i
55	8		
57	8		
59	8		
61	8		
63	10.50		200c
65	10.50		200c
67	10.50		200c
69	15		200c
71	18		200c
73	20		200c
75	20		200c
77	24		250c,100i
79	24		250c,100i
81	36		350c,150i
83	43		350c,150i
85	51		430c,190i
87	60		480c,225i
89	70		480c,225i

Journal of the American Chemical Society		
Year	Members (USD)	Non-members (USD)
65	13	26
67	16	32
69	16	32
71	22	44
73	22	66
75	22	88
77	28	112
79	42	168
81	50	200
83	52	253
85	61	299
87	70	350
89	75	499

Annals of the American Academy of Political and Social Science			
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53	5	200	
55	6	200	
57	6	200	
59	7	200	
61	8	200	
63	8	500	
65	10	500	
67	10	500	
69	12	500	
71	12	500	
73	12	500	
75	15	500	
77	15	500	
79	18	500	
81	18		35
83	26		45
85	26		45
87	26		50
89	30		66

Physical Review s=student a=section a b=section b c=section c d=section d all=all sections					
Year	Prices (USD)				
	Subscripion (All sections)	Section A members/ non-members	Section B members/ non-members	Section C members/ non-members	Section D members/ non-members
51	25				
53	30				
53	30				
55	30				
57	40,10,0s				
59	40,10				
61	40,10				
63	40,10				
65	45	17.50	17.50		
67	9(1-5)/36,50				
69	15(1-5)/50,30(1-5)/100				
71		15/30	30/60	15/30	30/60
73		15/40	30/80	15/40	30/80
75		15	30	15	30
77		15	30	15	30
79	120	20			
81	120	20			
83	222	37			
85	260	50			
87		60			
89	770(non-members)				
	3435(non-members/all)	85			

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