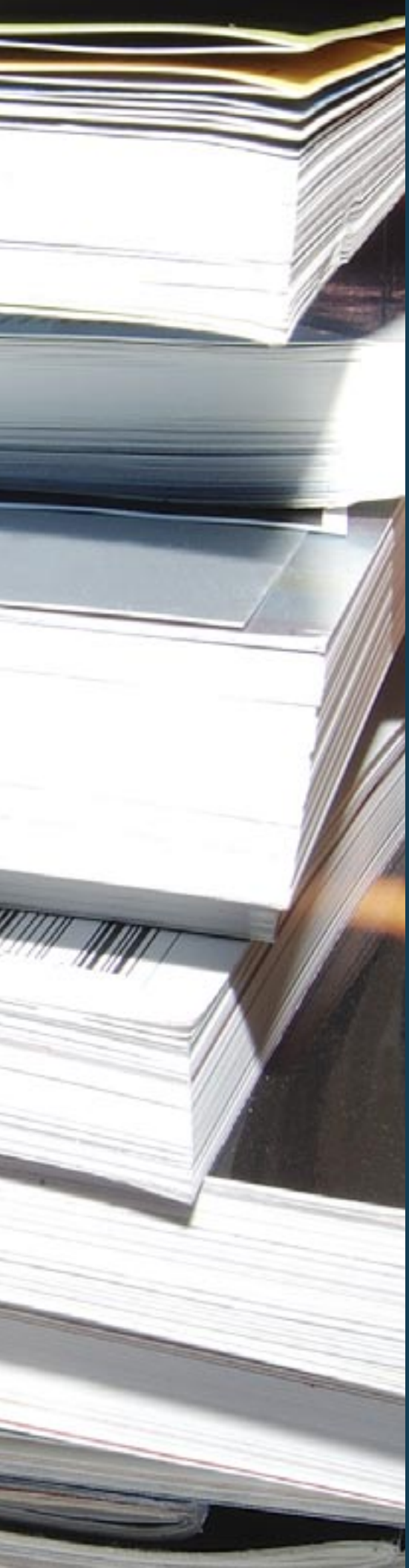


LIMITED KNOWLEDGE

HOW THE HIGH COST OF ACADEMIC JOURNALS LIMITS PUBLIC ACCESS TO RESEARCH

CALPIRG

CALIFORNIA STUDENT PUBLIC INTEREST RESEARCH GROUP

ACKNOWLEDGEMENTS

The author thanks George R. Blumenthal (System wide Academic Senate, University of California), John Ober (California Digital Library, University of California) and Kathy Lin (Northwestern University). Thanks to Alison Cassady and Nikki Riedt for editorial assistance.

The Student Public Interest Research Groups (Student PIRGs) offer an independent, articulate voice on behalf of the public interest. Investigating problems, crafting solutions, educating the public and offering students meaningful opportunities for civic participation, the Student PIRGs have been a leader on key public interest issues since 1972.

For more information, contact the Student PIRGs at:

3435 Wilshire Blvd., Suite 385

Los Angeles, CA 90010

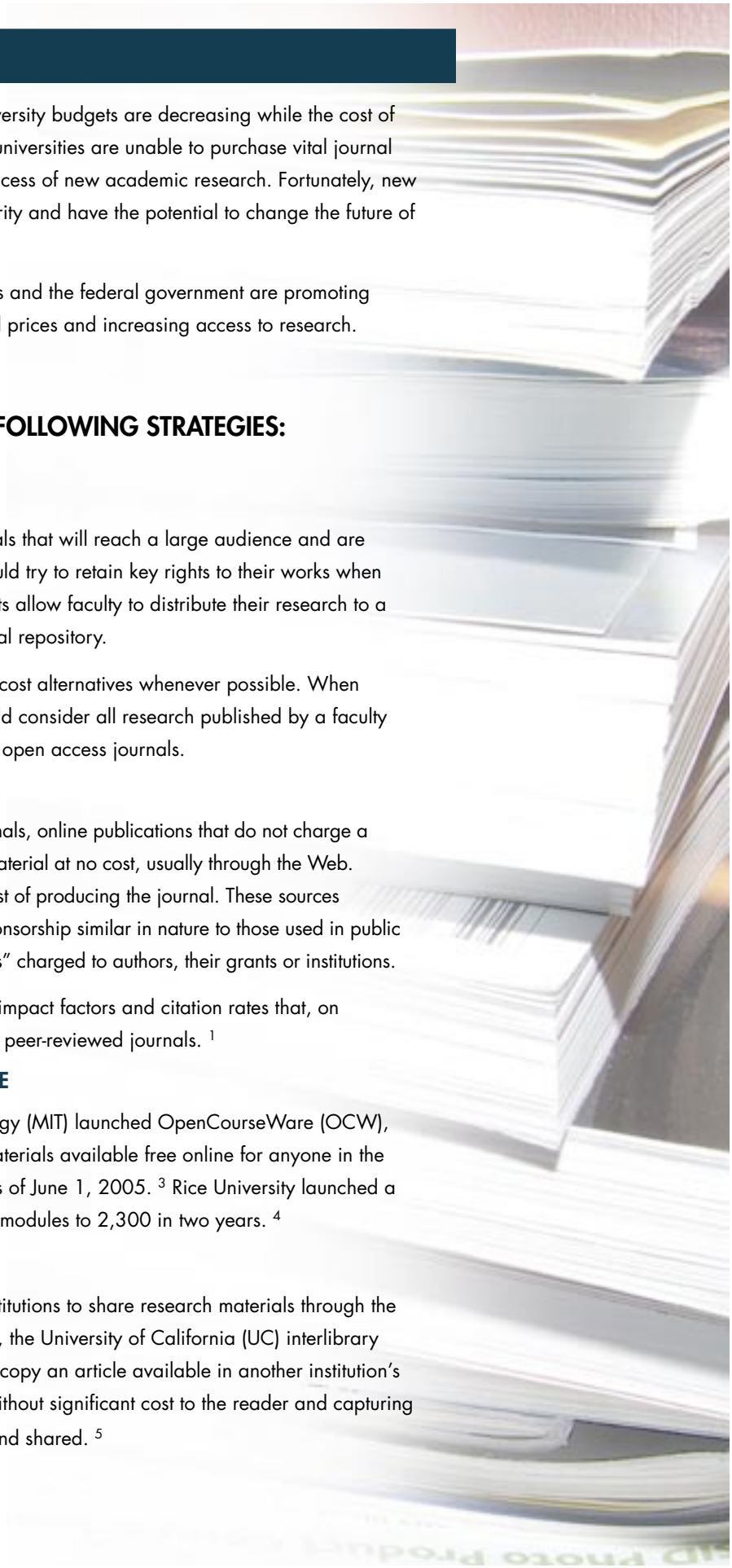
(213) 251-3680

Additional copies of this report can be obtained by visiting: www.MakeTextbooksAffordable.com.

EXECUTIVE SUMMARY

The future of academic research is in peril. University budgets are decreasing while the cost of academic journals is skyrocketing. As a result, universities are unable to purchase vital journal subscriptions that help boost the quality and success of new academic research. Fortunately, new and innovative solutions are growing in popularity and have the potential to change the future of academic communication.

Research institutions, independent organizations and the federal government are promoting strategies that show promise in lowering journal prices and increasing access to research.



THE STUDENT PIRGS SUPPORT THE FOLLOWING STRATEGIES:

HIGH-QUALITY LOW-COST JOURNALS

Faculty should try to publish their work in journals that will reach a large audience and are low cost. When that is not possible, faculty should try to retain key rights to their works when negotiating with high cost publishers. Such rights allow faculty to distribute their research to a broader audience and submit it to an institutional repository.

Institutions should subscribe to high-quality, low-cost alternatives whenever possible. When deciding tenure, university administrations should consider all research published by a faculty member including high-quality, low-cost and/or open access journals.

OPEN ACCESS JOURNALS

Faculty should try to publish in open access journals, online publications that do not charge a subscription fee, but allow anyone to read the material at no cost, usually through the Web. Instead, other sources are sought to cover the cost of producing the journal. These sources include establishing supporting endowments, sponsorship similar in nature to those used in public broadcasting, or through fees for "article process" charged to authors, their grants or institutions.

Open access peer-reviewed journals also have impact factors and citation rates that, on average, are equal to or higher than traditional peer-reviewed journals. [1]

OPEN COURSE MATERIALS AND SOFTWARE

In 1999, the Massachusetts Institute of Technology (MIT) launched OpenCourseWare (OCW), a program MIT uses to make all of its course materials available free online for anyone in the world. [2] OCW had 1,100 courses published as of June 1, 2005. [3] Rice University launched a similar site, Connexions, which grew from 200 modules to 2,300 in two years. [4]

LEVERAGE INTERLIBRARY LOAN SYSTEMS

Interlibrary loaning programs allow multiple institutions to share research materials through the Web or a manual delivery system. For example, the University of California (UC) interlibrary loan system allows a library to borrow or photocopy an article available in another institution's collections, thus providing access to research without significant cost to the reader and capturing efficiencies in the way materials are collected and shared. [5]

CREATE PERMANENT INSTITUTIONAL ARCHIVES

Administrators and librarians should create permanent standing archives in which researchers at the institution can deposit their work. The university system maintains the archive and makes available the research stored within it over the Internet. This guarantees free permanent access to the research produced by that university to the university itself, other university systems and the public.

BULK PURCHASING

Institutions should purchase journals in consortia with other universities to help lower subscription prices. In 2002, the UC campuses, negotiating in consortia through the California Digital Library, saved $27 million dollars.[6] After purchasing the information, each of the UC schools had access to it through the Internet. Bulk purchasing lowers the prices and maintains user access to vital research. UC budget materials give dramatic evidence of the advantages of library resource sharing, reporting that if campus libraries independently were to negotiate for, license, and catalog the 10,000 journal titles and 250 databases in the system wide digital collection, they would have to spend an additional $34 million per year. [7]

PUBLICLY FUNDED RESEARCH AVAILABLE TO THE PUBLIC

The creation of central, standing archives for publicly funded research allow free access to valuable information, benefiting universities, government agencies, and the general public.

"Knowledge is the only instrument of production not subject to diminishing returns." [8]

Individual professors, universities and organizations dedicated to increasing access to research have successfully made initial steps towards solving this problem by implementing one or more of the strategies described here, but more rigorous change is needed in order to balance the public's need for advanced research and the publishers' profits.

INTRODUCTION

The future of academic research is in peril. University budgets are decreasing while the cost and quantity of academic journals is skyrocketing. As a result, universities are unable to purchase vital journal subscriptions that help boost the quality and success of new academic research. The problem has slowly worsened over the past 40 years. Fortunately, new and innovative solutions are growing in popularity and have the potential to change the future of academic communication.

Commercial publishing of academic journals first developed in the 1960s and 1970s as a result of dramatic growth in academia, including an increase in federal funding for education, a jump in student enrollment and the number of faculty teaching and heightened pressure on faculty to publish to achieve tenure. As a result, the scholarly societies that published academic research at the time were unable to keep up with growing demand. [9]

The higher education community welcomed the commercial publishers' foray into academic journals, as they promised to increase the number of publications accepting faculty submissions, giving faculty more opportunities to publish and achieve tenure. It appeared that commercial publishing would expand scholarly communication while giving a boost to faculty tenure. But by the mid 1980s, commercial publishers had already increased journal prices so dramatically that libraries were canceling journal subscriptions on a yearly basis. The cycle continues today: fewer subscriptions cause higher prices, and higher prices cause libraries to cancel more subscriptions. [10]

The cycle has come to be known as "the serials crisis." [11] As Peggy E. Hoon, North Carolina State University director of the Libraries' Scholarly Communication Center, states, "Let's be clear: the most immediate, severe, and continuously escalating demand on funds for academic library materials comes from publishers of scientific, medical, and technical journals." [12] The Association of American Universities, the Association of Research Libraries and the American Library Association represent all the major research institutions in the United States and have complained that academic journals are too expensive and are limiting the availability of research to professors and students. When faculty can not share their work with students and other faculty because the journal they published in is too expensive, the impact of their work is diminished. And when vital research, much of which is funded with public tax dollars, is not disseminated, the public loses potential benefits that might have come as a result of the research they funded.

Therefore, it is vital that we examine new and innovative methods to promote and publish academic research. The benefits of doing so have the potential to expedite future advances in research, benefiting everyone.

THE PROBLEM

The problem can be summarized in three parts: one, academic journal prices are rising; two, university budgets are decreasing; and three, the current tenure system encourages faculty to publish in high-cost journals.

ACADEMIC JOURNAL PRICES ARE RISING

The American Library Association most recently reported that from 2000 to 2004 the average price of a one-year periodical subscription rose from $241.54 to $328.47 and some subscriptions are $25,000 a year and higher. [13]

The rising cost of academic journals is partially due to the inelasticity of the journal market. This is because there is no replacement for research offered by scholarly journal publishers. Even with

the presence of price-lowering "competition" (multiple journals on the same topic), the content in each publication is unique and therefore different journals are not substitutable products. [13] Not only are journals unique, but demand is steady and constant. Universities buy the latest journals in order to maintain the quality of their research libraries because journals are the "primary vehicle of communication" among researchers. [15]

To date, publishers can raise subscription prices without fear of losing a significant portion of the market. As Richard Edwards, vice chancellor at the University of Nebraska-Lincoln, and David Shulenburger, vice chancellor, University of Kansas, explain, "Commercial publishers, which recognized the relative inelasticity of both supply and demand [in the academic journal market], acquired top-quality journals, and then dramatically raised the prices, expecting that they would lose relatively little of the market. They were right." [16]

Another factor that contributes to the high cost of journals is the unusually high profit margin that commercial publishers and some non-profit publishers make off their product. Scholarly journal publishers make up to eight times the profit that other publishers make. According to CreateChange, an organization supported by the Association of Research Libraries, the Association of College and Research Libraries (a division of the American Library Association) and the Scholarly Publishing and Academic Resources Coalition, scholarly publishers earn up to 40% profit, whereas the average for all other publishers stays close to 5%.[17]

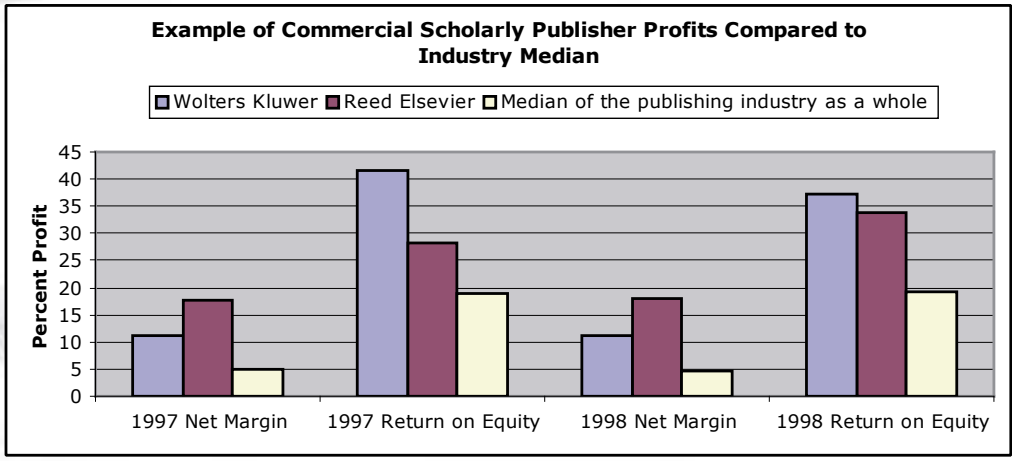


CHART 1: EXAMPLE OF COMMERCIAL SCHOLARLY PUBLISHER PROFITS COMPARED TO INDUSTRY MEDIAN

The American Library Association reported in January 2004 that Harvard, Cornell, and UCLA had to slash journal subscriptions "as a way to reconcile increasing serials costs with diminishing budgets." [20]

As prices continue to rise, universities have cut back on the number of journal subscriptions they order. For example, in 1986, the typical North American research library spent $1.52 million to maintain its journal collection for scholars and students. In 1999, the same library spent $4.1 million (+170%) to maintain a journal collection that is smaller by more than 1,000 titles — a 6.5% reduction. [18]

UNIVERSITY BUDGETS ARE DECREASING

State budget cuts have exacerbated the problem of rising journal costs limiting the number of subscriptions a university can afford. The University of California (UC) system reported that state funding was cut 16% from 2001 to 2004. [19] The University of Michigan faced a 15% budget cut in fiscal year 2004 alone. [21] With budgets cut 15-16% and journal subscription prices rising by 8.2%, it is no wonder that research is not ending up on library shelves.

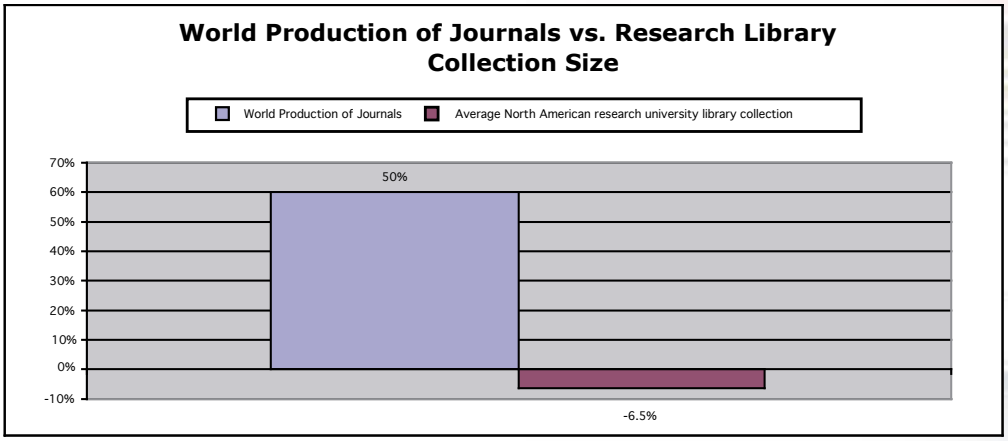


CHART 2: WORLD PRODUCTION OF JOURNALS VS. RESEARCH LIBRARY'S COLLECTION SIZE FROM 1986-2000

When universities can't afford to subscribe to scholarly journals, the value of the research in those journals is diminished. According to Harold Baranger, chair of the physics department at Duke University, "As journals consume an ever larger fraction of the library budget, purchase of books becomes very constrained and may hurt students starting research or faculty entering new areas." [23]

TENURE SYSTEM REQUIRES FACULTY TO PUBLISH IN HIGH-COST JOURNALS

Faculty, in order to achieve tenure or to even be hired somewhere, must publish in well-respected journals, which are often high-cost. Many tenure committees consider a lower acceptance rate, or the number of accepted articles vs. number of submitted articles, as more prestigious for a journal. Therefore, many faculty attempt to publish in low acceptance rate journals. The Society of Women in Science states, "To rank journals…tenure committees often call journals for their acceptance rates. A 30% acceptance rate is good." [24] Low acceptance rate journals often have a higher level of prestige associated with them. Publishers then charge a high premium for this prestige and tenure committees use the prestige of the journal as a surrogate for the quality of the research itself. [25] Journal publishing company Elsevier maintains an acceptance rate on average of 20% although it varies greatly by journal. [26] Elsevier charges between $3,000-$5,000 per journal per year for most journals. [27] Another publisher, Springer-Vela, maintains an average acceptance rate of 18% and charges about $4,000 per year per journal. [28] Thus, the best articles by the most distinguished faculty are being published in high-cost journals.

With academic journal prices rising, university budgets decreasing, and the current system of tenure reinforcing the high-priced academic journal, it is no wonder that research dissemination has reached a crisis in many fields.

CreateChange reports that while the world production of journals is up 50%, the average North American research university journal collection has actually decreased.[22] More is being published, but less is ending up on library shelves.

Dr. K. K. Chon, at Universiti Sains Malaysia, wrote, "I think what MIT has done with the OpenCourseWare initiative has clearly manifested the saying that 'Knowledge triumphs in openness.' It really opens up a 'huge vault' of knowledge to people all over the world who just want to know or learn something - to be knowledgeable. [29]

THE SOLUTION

Research institutions, independent organizations, and the federal government are promoting strategies that show promise in lowering journal prices and increasing access to research. The Student PIRGs support the following strategies:

HIGH-QUALITY LOW-COST JOURNALS

INSTITUTIONAL CONTRIBUTION

Institutions should subscribe to high-quality, low-cost alternatives whenever possible. One study showed that low-cost journals launched by the Scholarly Publishing and Academic Resources Coalition (SPARC) have helped to lower commercial publishers' annual rate of price increases. Over several years, the expensive Tetrahedron Letters increased an average of 15% a year. Shortly after SPARC's Organic Letters was introduced, the annual price of Tetrahedron Letters increased at a much lower rate, an average of just 2% a year. [30]

When deciding tenure, university administrations should consider all research published by a faculty member including high-quality, low-cost and/or open access journals.

FACULTY CONTRIBUTION

Faculty should also instigate change. University faculty who are intimately involved with top-tier journals hold enormous influence. Nearly 15% of top-tier journals' editorial boards include UC faculty. [31] John Ober, director of policy, planning and outreach for the UC Office of Scholarly Communication, notes that some editorial boards of journals have revolted from commercial publishers. Entire boards have quit, establishing new, lower-cost journals and bringing their reputation with them. [32]

For example, the editorial board of the Journal of Algorithms resigned en masse following an analysis of the journal's pricing history and established a lower priced competing journal, ACM Transactions on Algorithms (TALG).[33]

OPEN COURSE MATERIALS AND SOFTWARE

In 1999, the Massachusetts Institute of Technology (MIT) launched OpenCourseWare (OCW), a program MIT uses to make all of its course materials available free online for anyone in the world. [34] OCW had 1,100 courses published as of June 1, 2005. [35]

OCW has received rave reviews from students, faculty and self-learners from around the world. Dr. K. K. Chon, a lecturer in the School of Civil Engineering at Universiti Sains Malaysia, wrote, "I think what MIT has done with the OpenCourseWare initiative has clearly manifested the saying that 'Knowledge triumphs in openness.' It really opens up a 'huge vault' of knowledge to people all over the world who just want to know or learn something - to be knowledgeable. It is really a very 'unthinkable' noble effort by MIT." [36]

Rice University launched a similar site, Connexions, which grew from 200 modules to 2,300 in two years. [37] Connexions is different from MIT's OCW in a couple of ways. Connexions offers free software tools in addition to course materials, and it is trying to reform the peer reviewing process and publishing. According to Richard G. Baraniuk, who started Connexions in 1999, "Peer review is severely broken. Publishing takes too long and then books are too expensive…This is about cutting out the middlemen and truly making information free." [38]

Connexions is growing in popularity. The University of California's new campus at Merced, which

opens fall 2005, plans to use Connexions for many of its science courses. According to Jeff Wright, dean of engineering at UC Merced, "I want to create a culture at UC Merced that is an open source culture. It will be a better environment for students and professors to be using this site with lots of [non-Merced material]. Students will see that there is a huge community out there from which they can gain nourishment." [39]

OPEN ACCESS JOURNALS

Faculty should publish in open access journals, online publications that do not charge a subscription fee, but allow anyone to read the material at no cost, usually through the Web. Instead, other sources are sought to cover the cost of producing the journal. These sources include establishing a supporting endowment, sponsorship similar in nature to those used in public broadcasting, or through fees for "article process" charged to authors, their grants or institutions. [40]

Although high-quality, open access journals are relatively new, organizations such as the Public Library of Science (PLoS) are building on successful models to increase their numbers. In addition to *PLoS Biology* and *PLoS Medicine*, PLoS is launching several community journals in 2005 — *PLoS Computational Biology*, *PLoS Genetics*, and *PLoS Pathogens* — and *PLoS Reports*, which will be an innovative online forum for open-access dissemination of biomedial reserach. [41] Open access peer-reviewed journals also have impact factors and citation rates that on average are equal to or higher than traditional peer-reviewed journals. [42]

LEVERAGE INTERLIBRARY LOAN SYSTEMS

Interlibrary loaning programs allow multiple institutions to share research materials through the Web or a manual delivery system. For example, the UC Interlibrary Loan System allows a library to borrow or photocopy an article available in another institution's collections, thus providing access to research without significant cost to the reader and capturing efficiencies in the way materials are collected and shared. [43]

CREATE PERMANENT INSTITUTIONAL ARCHIVES

Administrators and librarians can create permanent standing archives in which researchers at the institution can deposit their work. The university system maintains the archive and makes available the research stored within it over the Internet. This guarantees free permanent access to the research produced by that university to the university itself, other university systems and the public. According to John Ober, director of policy, planning and outreach for the UC Office of Scholarly Communication, the UC system launched eScholarship in 2003 to archive UC faculty works, including articles and books produced by the UC Press. [44] As of Fall 2005, eScholarship will have more than 1,900 UC Press titles online, many of which are currently available to the public, and the UC system reports that more than 200 of its departments and research units deposit working papers into eScholarship's repository. [45]

In 2002, the UC campuses, negotiating in consortia through the California Digital Library, saved $27 million dollars.[46] *After purchasing the information, each of the UC schools had access to it through the Internet.*

BULK PURCHASING

Institutions should purchase journals in consortia with other universities to help lower subscription prices. In 2002, the UC campuses, negotiating in consortia through the California Digital Library, saved $27 million dollars. [46] After purchasing the information, each of the UC schools had access to it through the Internet. Bulk purchasing lowers the prices and maintains user access to vital research. UC budget materials give dramatic evidence of the advantages of library resource sharing, reporting that if campus libraries independently were to negotiate for, license, and catalog the 10,000 journal titles and 250 databases in the system wide digital collection, they would have to spend an additional $34 million per year. [47]

PUBLICLY FUNDED RESEARCH AVAILABLE TO THE PUBLIC

In July 2004, the U.S. House Appropriations Committee recommended that the National Institutes of Health (NIH) require all research that receives funding from the NIH deposit such articles in PubMed Central (PMC). The NIH began implementing a version of the policy in May 2005. NIH also launched PubChem, which connects chemical information with biomedical research and catalogs the names and structures of 850,000 chemicals. It is a publicly-accessible, permanent, and searchable electronic archive available on the Internet. [48]

In May 2005, the American Chemical Society (ACS) started lobbying Congress to shut down PubChem, arguing that NIH inappropriately competes with the private sector. Supporters of NIH's databases disagree. SPARC's Rick Johnson says that unlike ACS, NIH researchers are not hiring chemists to pore through patents to extract chemical names and structures. "They're taking on something that is not any threat to them and they are precluding an activity that will be key to returning on the NIH investment [in the human genome]...new drugs and better health care." [49]

The creation of central, standing archives for publicly funded research allows free access to valuable information, benefiting universities, government agencies and the general public.

CONCLUSION

High academic journal prices and decreasing university budgets have limited research institutions' access to information, creating a veritable crisis in scholarly communication. As journal prices increase and budgets show no sign of keeping pace, it is imperative that all strategies for managing costs and increasing access to research be implemented.

RESOURCES

American Library Association:

http://www.ala.org/

Association of Research Libraries:

http://createchange.org

Connexions:

http://cnx.rice.edu

Creative Commons:

http://creativecommons.org

National Institute of Health:

http://nihroadmap.nih.gov/index.asp

OpenCourseWare:

http://ocw.mit.edu/OcwWeb/Global/AboutOCW/worldreaction.htm

Public Library of Science:

http://www.plos.org/journals/

Scholarly Publishing and Academic Research Coalition:

http://www.arl.org/sparc/

University of California Website on Reshaping Scholarly Communication and eScholarships:

http://osc.universityofcalifornia.edu/

ENDNOTES

1 "Support Publishing Experiments and New Business Models." Office of Scholarly Communication, University of California. <http://osc.universityofcalifornia.edu/sustainable/new_business_models.html>.

2 "MIT OpenCourseWare." Massachusetts Institute of Technology. 1 Aug. 2005 <http://ocw.mit.edu/OcwWeb/Global/AboutOCW/about-ocw.htm>.

3 Ibid.

4 "Really Open Source." Inside Higher Ed. News. 29 July 2005 <http://insidehighered.com/news/2005/07/29/open>

5 "Getting Materials Not Held in the UCSD Libraries." University of California, San Diego Libraries. 24 Aug. 2004 <http://libraries.ucsd.edu/services/ill-dds/other.html>.

6 Ibid.

7 University of California 2005-06 Budget for Current Operations. Nov. 2004. pg. 185. <http://budget.ucop.edu/rbudget/200506/2005-06budgetforcurrentoperations.pdf>

8 J.M. Clark. Journal of Political Economy. Oct 1927.

9 Scholars Under Siege. 12 July 2005 <http://www.createchange.org/librarians/issues/silent.html#Case>.

10 Ibid.

11 Crawford, Walt. "Beware of What You Wish For: Online Journal Quandaries." American Libraries. 33.10 (2002): 32.

12 Hoon, Peggy E. "Who Woke the Sleeping Giant? Libraries, Copyrights, and the Digital Age." Change. 34.6 (2002): 32.

13 Dingley, Brenda. "U.S Periodical Price Index – 2004." American Library Association 12 July 2005. <http://www.ala.org/ala/alctscontent/alctspubsbucket/alctsresources/general/periodicalsindex/2004-PPI.pdf>.

14 Edwards, Richard, and David Shulenburger. "The High Cost of Scholarly Journals (And What to Do About It)." Change 35.6 (2003): 15.

15 Hoon, Peggy E. "Who Woke the Sleeping Giant? Libraries, Copyrights, and the Digital Age." Change 34.6 (2003): 32.

16 Edwards, Richard, and David Shulenburger. "The High Cost of Scholarly Journals (And What to Do About It)." Change 35.6 (2003): 14.

17 Hoon, Peggy E. "Who Woke the Sleeping Giant? Libraries, Copyrights, and the Digital Age." Change. 34.6 (2003): 32.

18 Scholars Under Siege. 12 July 2005 <http://www.createchange.org/librarians/issues/silent.html#Case>

19 Dynes, Robert C. "Letter to University of California Students and Parents." 26 May 2004.

20 "Harvard, Cornell Slash Journal Subscriptions." American Libraries 35.1 (2004): 23.

21 University of Michigan Office of the Provost. "FY 2004-2005 General Fund Operating Budget." 15 July 2004. 12 July 2005 <http://www.provost.umich.edu/budgeting/budget_2004-2005.html>.

22 "Create Change Powerpoint." 7 Aug. 2004 <http://www.createchange.org/librarians/advocacy/coretool.html>.

23 Ke, Tracy. "As journal prices rise, libraries struggle." 4 Feb 2005. The Chronicle Online: The Independent Daily at Duke University. <http://www.chronicle.duke.edu/vnews/display.v/ART/2005/02/04/42039307ded16 4 Aug 2005>

24 "Strategies for Getting Tenure". 13 July 2005 <http://newmedia.colorado.edu/~socwomen/about/gettenure.pdf>.

25 Ober, John. Director of Policy, Planning and Outreach, University of California Office of Scholarly Communication. Email interview, 8 Aug. 2005.

26 Shortliffe, E.H. "Journal of Biomedical Informatics." Elsevier. 13 July 2005 <http://www.elsevier.com/wps/find/journaldescription.cws_home/622857/description>.

27 Rehmann, Ulf. "Math Journal Price Survey based on AMS 2004 data." 13 July 2005 <http://www.mathematik.uni-bielefeld.de/~rehmann/BIB/AMS/Price_per_Volume.html>.

28 Ibid.

29 "World Reaction." MIT OpenCourseWare. Massachusetts Institute of Technology. 1 Aug. 2005 <http://ocw.mit.edu/OcwWeb/Global/AboutOCW/worldreaction.htm>.

30 Case, Mary M. "Capitalizing on Competition: The Economic Underpinnings of SPARC." 2002 <http://www.arl.org/sparc/core/index.asp?page=f41>.

31 Ober, John. Director of Policy, Planning and Outreach, University of California Office of Scholarly Communication. Email. 24 Aug. 2005

32 Ober, John. Director of Policy, Planning and Outreach, University of California Office of Scholarly Communication. Email interview, 8 Aug. 2005.

33 "Support Publishing Experiments and New Business Models." Office of Scholarly Communication, University of California. <http://osc.universityofcalifornia.edu/sustainable/new_business_models.html>.

34 "MIT OpenCourseWare." Massachusetts Institute of Technology. 1 Aug. 2005 <http://ocw.mit.edu/OcwWeb/Global/AboutOCW/about-ocw.htm>.

35 Ibid.

36 "World Reaction." MIT OpenCourseWare. Massachusetts Institute of Technology. 1 Aug. 2005 <http://ocw.mit.edu/OcwWeb/Global/AboutOCW/worldreaction.htm>.

37 "Really Open Source." Inside Higher Ed. News 29 July 2005 <http://insidehighered.com/news/2005/07/29/open>.

38 Ibid.

39 Ibid.

40 "Harvard, Cornell Slash Journal Subscriptions." American Libraries. 35.1 (2004): 23.

41 "PLoS." 24 Aug. 2005 <http://www.plos.org/journals/index.html>.

42 "Support Publishing Experiments and New Business Models." Office of Scholarly Communication, University of California. <http://osc.universityofcalifornia.edu/sustainable/new_business_models.html>.

43 "Getting Materials Not Held in the UCSD Libraries." University of California, San Diego Libraries. 24 Aug. 2004 <http://libraries.ucsd.edu/services/ill-dds/other.html>.

44 Ober, John. Director of Policy, Planning and Outreach, University of California Office of Scholarly Communication. Email interview, 8 Aug. 2005.

45 Ober, John. Director of Policy, Planning and Outreach, University of California Office of Scholarly Communication. Email interview, 24 Aug. 2005.

46. "Getting Materials Not Held in the UCSD Libraries." University of California, San Diego Libraries. 24 Aug. 2004 <http://libraries.ucsd.edu/services/ill-dds/other.html>.

47 University of California 2005-06 Budget for Current Operations. Nov. 2004. pg. 185. <http://budget.ucop.edu/rbudget/200506/2005-06budgetforcurrentoperations.pdf>

48 Sternstein, Aliya. "Chemical Publisher goes after NIH." FCE Media Group. 27 May 2005. <http://www.fcw.com/article88988-05-27-05-Web>

49 Ibid.

CALPIRG

CALIFORNIA STUDENT PUBLIC INTEREST RESEARCH GROUP

3435 WILSHIRE BLVD, SUITE 385

LOS ANGELES, CA 90010

(213) 251-3680

WWW.CALPIRGStudents.ORG