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## Open Access

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## ECONOMICS

Many publishers who oppose OA concede that OA is better for research and researchers than toll access.<sup>1</sup> They merely object that we can't pay for it. But we can pay for it.

The first major study of the economic impact of OA policies was conducted by John Houghton and Peter Sheehan in 2006. Using conservative estimates that a nation's gross expenditure on research and development (GERD) brings social returns of 50 percent, and that OA increases access and efficiency by 5 percent, Houghton and Sheehan calculated that a transition to OA would not only pay for itself, but add \$1.7 billion/year to the UK economy and \$16 billion/year to the U.S. economy. A later study focusing on Australia used the more conservative estimate that GERD brings social returns of only 25 percent, but still found that the bottom-line economic benefits of OA for publicly funded research were 51 times greater than the costs.<sup>2</sup>

Independent confirmation of Houghton's results came in a major study released in April 2011, commissioned by the UK Joint Information Systems Committee, Publishing Research Consortium, Research Information Network, Research Libraries UK, and the Wellcome Trust. After studying five scenarios for improving research access, it concluded that green and gold OA "offer the greatest potential to policy-makers in promoting access. Both have positive, and potentially high, BCRs [benefit-cost ratios]. . . ."3

The same study noted that "the infrastructure for Green [OA] has largely already been built" and therefore that "increasing access by this route is especially cost-effective. . . ." I can add that repositories scale up more easily than journals to capture unmet demand, and that depositing in a repository costs the depositor nothing. For all these reasons, I'll focus in this chapter on how to pay for gold OA (journals), not how to pay for green OA (repositories).

Before turning to gold OA, however, I should note that there are widely varying estimates in the literature on what it costs a university to run an institutional repository. The divergence reflects the fact that repositories can serve many different purposes, and that some repositories serve more of them than others. If the minimum purpose is to host OA copies of faculty articles, and if faculty deposit their own articles, then the cost is minimal. But a repository is a general-purpose tool, and once launched there are

OA journals pay their bills the way broadcast television and radio stations do—not through advertising or pledge drives, but through a simple generalization on advertising and pledge drives. Those with an interest in disseminating the content pay the production costs upfront so that access can be free of charge for everyone with the right equipment.

good reasons for it to take on other responsibilities, such as long-term preservation, assisting faculty with digitization, permissions, and deposits, and hosting many other sorts of content, such as theses and dissertations, books or book chapters, conference proceedings, courseware, campus publications, digitized special collections, and administrative records. If the average repository is a significant expense today, the reason is that the average repository is doing significantly more than the minimum.<sup>4</sup>

OA journals pay their bills the way broadcast television and radio stations do—not through advertising or pledge drives, but through a simple generalization on advertising and pledge drives. Those with an interest in disseminating the content pay the production costs upfront so that access can be free of charge for everyone with the right equipment. Elsewhere I’ve called this the “some pay for all” model.<sup>5</sup>

Some OA journals have a subsidy from a university, library, foundation, society, museum, or government agency. Other OA journals charge a publication fee on accepted articles, to be paid by the author or the author’s sponsor (employer or funder). The party paying the subsidy or fee covers the journal’s expenses and readers pay nothing.

OA journals that charge publication fees tend to waive them in cases of economic hardship, and journals with institutional subsidies tend not to charge publication fees.

OA journals can diversify their funding and get by on lower subsidies, or lower fees, if they also have revenue from print editions, advertising, priced add-ons, or auxiliary services. Some institutions and consortia arrange fee discounts, or purchase annual memberships that include fee waivers or discounts for all affiliated researchers.

Models that work well in some fields and nations may not work as well in others. No one claims that one size fits all. There's still room for creativity in finding ways to pay the costs of a peer-reviewed OA journal, and many smart and motivated people are exploring different possibilities. Journals announce new variations almost every week, and we're far from exhausting our cleverness and imagination.<sup>6</sup>

Green OA may suffer from invisibility, but gold OA does not. On the contrary, researchers who don't know about OA repositories still understand that there are OA journals. Sometimes the visibility gap is so large that researchers, journalists, and policy-makers conclude that all OA is gold OA (see section 3.1 on green and gold OA). As a result, most researchers who think about the benefits of OA think about the benefits of gold OA. Here, at least, the news is good. The most comprehensive survey to date shows that an overwhelming 89 percent of researchers from all fields believe that OA journals are beneficial to their fields.<sup>7</sup>

Apart from the myth that all OA is gold OA, the most common myth about gold OA is that all OA journals charge

“author fees” or use an “author-pays” business model. There are three mistakes here. The first is to assume that there is only one business model for OA journals, when there are many. The second is to assume that charging an upfront fee means authors are the ones expected to pay it. The third is to assume that all or even most OA journals charge upfront fees. In fact, most OA journals (70 percent) charge no upfront or author-side fees at all. By

### **Terminology**

The terms “author fees” and “author pays” are specious and damaging. They’re false for the majority of OA journals, which charge no fees. They’re also misleading even for fee-based OA journals, where nearly nine times out of ten the fees are not paid by authors themselves. It’s more accurate to speak of “publication fees,” “processing fees,” or “author-side fees.” The first two don’t specify the payor, and the third merely specifies that the payment comes from the author side of the transaction, rather than the reader side, without implying that it must come from authors themselves.

contrast, most toll-access journals (75 percent) do charge author-side fees. Moreover, even within the minority of fee-based OA journals, only 12 percent of those authors end up paying the fees out of pocket. Almost 90 percent of the time, the fees at fee-based journals are waived or paid by sponsors on behalf of authors.<sup>8</sup>

The false beliefs that most OA journals charge author-side fees and that most toll-access journals don't have caused several kinds of harm. They scare authors away from OA journals. They support the misconception that gold OA excludes indigent authors. When we add in the background myth that all OA is gold OA, this misconception suggests that OA as such—and not just gold OA—excludes indigent authors.

These false beliefs also support the insinuation that OA journals are more likely than non-OA journals to compromise on peer review. But if charging author-side fees for accepted papers really creates an incentive to lower standards, in order to rake in more fees, then most toll-access journals are guilty and most OA journals are not. In fact, however, when OA journals do charge author-side fees, they create firewalls between their financial and editorial operations. For example, most fee-based OA journals will waive their fees in cases of economic hardship, and take pains to prevent editors and referees engaged in peer review from knowing whether or not an author has requested a fee waiver. By contrast, at toll-access journals

levying author-side page or color charges, editors generally know that accepted papers will entail revenue.<sup>9</sup>

The false belief that most OA journals charge author-side fees also infects studies in which authors misinform survey subjects before surveying them. In effect: “At OA journals, authors pay to be published; now let me ask you a series of questions about your attitude toward OA journals.”

Finally, this false belief undermines calculations about who would bear the financial brunt if we made a general transition from toll-access journals to OA journals. A handful of studies have calculated that after a general conversion of peer-reviewed journals to OA, high-output universities would pay more in author-side fees than they pay now in subscriptions. These calculations make at least two assumptions unjustified by present facts or trends: that all OA journals would charge fees, and that all fees would be paid by universities.<sup>10</sup>

There are two kinds of OA journals, full and hybrid. Full OA journals provide OA to all their research articles. Hybrid OA journals provide OA to some and toll-access to others, when the choice is the author’s rather than the editor’s. Most hybrid OA journals charge a publication fee for the OA option. Authors who can find the money get immediate OA, and those who can’t or prefer not to, get toll access. (Many hybrid OA journals provide OA to all their articles after some time period, such as a year.) Some

hybrid OA journals promise to reduce subscription prices in proportion to author uptake of the OA option, that is, to charge subscribers only for the toll-access articles. But most hybrid journal publishers don't make this promise and "double dip" by charging subscription fees and publication fees for the same OA articles.<sup>11</sup>

Hybrid OA is very low-risk for publishers. If the OA option has low uptake, the publisher loses nothing and still has subscription revenue. If it has high uptake, the publisher has subscription revenue for the conventional articles, publication fees for the OA articles, and sometimes both at once for the OA articles. Hence, the model has spread far and fast. The Professional/Scholarly Publishing division of the Association of American Publishers reported in 2011 that 74 percent of surveyed journals offering some form of OA in 2009 offered hybrid OA. At the same time, SHERPA listed more than 90 publishers offering hybrid OA options, including all of the largest publishers. Despite its spread, hybrid OA journals do little or nothing to help researchers, libraries, or publishers. The average rate of uptake for the OA option at hybrid journals is just 2 percent.<sup>12</sup>

The chief virtue of hybrid OA journals is that they give publishers some firsthand experience with the economics and logistics of OA publishing. But the economics are artificial, since hybrid OA publishers have no incentive to increase author uptake and make the model succeed. The

publishers always have subscriptions to fall back on. Moreover, an overwhelming majority of full-OA journals charge no publication fees and the overwhelming majority of hybrid-OA journals never gain firsthand experience with no-fee business models.<sup>13</sup>

A growing number of for-profit OA publishers are making profits, and a growing number of nonprofit OA publishers are breaking even or making surpluses. Two different business models drive these sustainable publishing programs. BioMed Central makes profits and the Public Library of Science makes surpluses by charging publication fees. MedKnow makes profits without charging publication fees by selling priced print editions of its OA journals.<sup>14</sup>

Fee-based OA journals tend to work best in fields where most research is funded, and no-fee journals tend to work best in fields and countries where comparatively little research is funded. The successes of these two business models give hope that gold OA can be sustainable in every discipline.

Every kind of peer-reviewed journal can become more sustainable by reducing costs. Although peer review is generally performed by unpaid volunteers, organizing or facilitating peer review is an expense. The journal must select referees, distribute files to referees, monitor who has what, track progress, nag dawdlers, collect comments and share them with the right people, facilitate communica-

tion, distinguish versions, and collect data on acceptances and rejections. One powerful way to reduce costs without reducing quality is to use free and open-source journal management software to automate the clerical tasks on this list.

The leader in this field is Open Journal Systems from the Public Knowledge Project, but there are more than a dozen other open-source packages. While OJS or other open-source software could benefit even toll-access journals, their use is concentrated among OA journals. OJS alone has more than 9,000 installations (though not all are used for managing journals). This is not merely an example of how one openness movement can help another but also of how fearing openness can lead conventional publishers to forgo financial benefits and leave money on the table.<sup>15</sup>

There are reasons to think that OA journals cost less to produce than toll-access journals of the same quality. OA journals dispense with subscription management (soliciting, negotiating, tracking, renewing subscribers), dispense with digital rights management (authenticating users, distinguishing authorized from unauthorized, blocking access to unauthorized), eliminate legal fees for licensing (drafting, negotiating, monitoring, and enforcing restrictive licenses), and reduce or eliminate marketing. In their place they add back little more than the cost of collecting

publication fees or institutional subsidies. Several studies and OA publishers have testified to these lower costs.<sup>16</sup>

We shouldn't count the savings from dropping print, since most toll-access journals in the sciences have already dropped their print editions and those in the humanities are moving in the same direction.

We should be suspicious when large, venerable, conventional publishers say that in their experience the economics of OA publishing don't work. Print-era publishers retooling for digital, and toll-access publishers retooling for OA, will inevitably realize smaller savings from OA than lean, mean OA start-ups without legacy equipment, personnel, or overhead from the age of print and subscriptions.

About one-quarter of all peer-reviewed journals today are OA. Like toll-access journals, some are in the black and thriving and some are in the red and struggling. However, the full range of OA journals begins to look like a success story when we consider that the vast majority of the money needed to support peer-reviewed journals is currently tied up in subscriptions to conventional journals. OA journals have reached their current numbers and quality despite the extraordinary squeeze on budgets devoted to the support of peer-reviewed journals.

Even if OA journals had the same production costs as toll-access journals, there's enough money in the system to pay for peer-reviewed OA journals in every niche where we currently have peer-reviewed toll-access journals, and at

the same level of quality. In fact, there's more than enough, since we wouldn't have to pay publisher profit margins surpassing those at ExxonMobil. Jan Velterop, the former publisher of BioMed Central, once said that OA publishing can be profitable but will "bring profit margins more in line with the added value."<sup>17</sup>

To support a full range of high-quality OA journals, we don't need new money. We only need to redirect money we're currently spending on peer-reviewed journals.<sup>18</sup> There are many kinds of redirection. One is the voluntary conversion of toll-access journals to OA. Conversion could be a journal's grudging response to declining library budgets for toll-access journals and exclusion from the big deals that take the lion's share of library budgets. It could be a grudging response to its own past price increases and rising levels of green OA (see chapter 8 on casualties). Or it could be a hopeful and enthusiastic desire to achieve the benefits of OA for authors (greater audience and impact), readers (freedom from price and permission barriers), and publishers themselves (increased readership, citations, submissions, and quality).

Another kind of redirection is the rise of OA journal funds at universities. Even during times of declining budgets, libraries are setting aside money to pay publication fees at fee-based OA journals. The funds help faculty choose OA journals for their new work and help build a sustainable alternative to toll-access journals.<sup>19</sup>

Redirection is also taking place on a large scale, primarily through CERN's SCOAP3 project (Sponsoring Consortium for Open Access Publishing in Particle Physics). SCOAP3 is an ambitious plan to convert all the major toll-access journals in particle physics to OA, redirect the money formerly spent on reader-side subscription fees to author-side publication fees, and reduce the overall price to the journal-supporting institutions. It's a peaceful revolution based on negotiation, consent, and self-interest. After four years of patiently building up budget pledges from libraries around the world, SCOAP3 entered its implementation phase in April 2011.<sup>20</sup>

If SCOAP3 succeeds, it won't merely prove that CERN can pull off ambitious projects, which we already knew. It will prove that this particular ambitious project has an underlying win-win logic convincing to stakeholders. Some of the factors explaining the success of SCOAP3 to date are physics-specific, such as the small number of targeted journals, the green OA culture in physics embraced even by toll-access publishers, and the dominance of CERN. Other factors are not physics-specific, such as the evident benefits for research institutions, libraries, funders, and publishers. A success in particle physics would give hope that the model could be lifted and adapted to other fields without their own CERN-like institutions to pave the way. Other fields would not need CERN-like money or dominance so much as CERN-like convening power to bring the

stakeholders to the table. Then the win-win logic would have a chance to take over from there.

Mark Rowse, former CEO of Ingenta, sketched another strategy for large-scale redirection in December 2003. A publisher could “flip” its toll-access journals to OA at one stroke by reinterpreting the payments it receives from university libraries as publication fees for a group of authors rather than subscription fees for a group of readers. One advantage over SCOAP3 is that the Rowsean flip can be tried one journal or one publisher at a time, and doesn’t require discipline-wide coordination. It could also scale up to the largest publishers or the largest coalitions of publishers.<sup>21</sup>

We have to be imaginative but we don’t have to improvise. There are some principles we can try to follow. Money freed up by the cancellation or conversion of peer-reviewed TA journals should be spent first on peer-reviewed OA journals, to ensure the continuation of peer review. Large-scale redirection is more efficient than small-scale redirection. Peaceful revolution through negotiation and self-interest is more amicable and potentially more productive than adaptation forced by falling asteroids.

For the record, I advocate redirecting money freed up by cancellations or conversions, not canceling journals in order to free up money (except with SCOAP3 or Rowse-like consent and negotiation). This may look like hair-splitting, but the difference is neither small nor subtle. It’s roughly the difference between having great expectations and planning to kill your parents.

