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DISPATCHES FROM THE SCIENCE DESK

Open access means a bright future for scientific research

Free access to British scientific research will give us more and cost us less than we realise

The UK government this week announced plans to make publicly funded scientific research immediately available for anyone to read for free by 2014. Photograph: Matthew Fearn/PA

The Guardian called the recent government announcement that all UK-funded research will be open access within two years, "the most radical shakeup of academic publishing since the invention of the internet". That's not an exaggeration: the web will finally achieve what it was initially created for: the free exchange of research. The payoff is literally incalculable: as a rough guide, the Human Genome Project's decision to make its results similarly open has yielded economic benefits exceeding 200 times the project's costs. As research outputs that were previously only available to academics become available for uses we can't even imagine yet, we can expect significant advances in medicine, education and industry.

But the news is even better than the announcement suggests. The government's statement was in response to the Finch report, and takes at face value that report's claim that the transition to an open-access academic ecosystem will cost £50-60m a year. In quarters where the response to the government announcement has not been enthusiastic, it has been because of the need to find this extra money from existing allocations. But these costs are hugely overstated. The true cost will likely be closer to £10m.

How did this overestimate come about? Because the Finch group was made up of members who "represented different constituencies who have legitimately different interests and different priorities". In particular, a large proportion of the group were subscription-based publishers whose business model stands to be undermined by open access, and who had every reason to undermine the report. They did this in three ways: first, by minimising the importance of "green open access", in which authors deposit their final drafts in public repositories with no payment to the publishers; second, by greatly over-estimating the typical costs of "gold open access", in which the author

pays an article processing charge (APC); and third, by further inflating the transition cost by including increased subscription fees.

As a result, the Finch report's transition cost of £50–60m is made up of "£38m on publishing in open access journals, £10m on extensions to licences and £3-5m on repositories." Of these costs, the £10m of extensions to licences can be discounted immediately: the transition will result in reductions to subscription licences, not increases. The £38m is based on an average APC "between £1.5k and £2k", which is nonsense. Even at the low end of this range, £1,500 is nearly double the $1,350 (£870) charged by PLoS ONE, and almost three times as much as the $906 (£585) found as the average of 100,697 articles in 1,370 journals. £1,500-£2,000 represents what subscription publishers would like to charge for gold open access, but it's not what the market will bear.

It gets worse for legacy subscription-based publishers like Elsevier and Wiley (and better for the public): gold open access will yield an author's market instead of a reader's, so publishers will no longer hold the monopolies they currently have. A researcher who needs to read an article in Cell can only get a subscription from Elsevier at Elsevier's price, whereas an author considering publishing in Cell can simply go elsewhere if the price is unattractive.

And the price will likely be unattractive. With new open-access publishers launching all the time, the likes of PeerJ promise peer-reviewed articles for a fee as low as $99 (£63), and eLife is waiving publication fees altogether for its first few years. On the new, level playing field, these sprightly electronic journals are likely to outcompete the dinosaurs. With an efficient market established, I expect strong downward pressure on APCs, yielding an average fee of perhaps £300-£400 – about one fifth of the "average APC" given in the Finch report. This brings the total yearly APC down from £38m to £7.6m. Throw in the report's £3-5m for repositories, and we are looking at a transition cost closer to £10m per year – about 16p for each of the UK's 60 million citizens. And within a few years, I expect the money saved from cancelled subscriptions to outweigh what is spent on APCs.

Yesterday also saw two more major announcements on open access in the UK, though they were somewhat overshadowed by the government's response to the Finch report. Research Councils UK, a coalition of the UK's biggest research funders, released its own updated open access policy, which is even more forthright than the broader government policy in requiring true open access that allows free commercial re-use. And maybe most important of all in the long term, flying in under the radar, the Higher Education Funding Council for England announced plans to require open access in all publications evaluated for the Research Evaluation Framework. This will remove the main reason that traditionalists have shied away from open access: fear that publications in newer OA journals will not be perceived as prestigious as those in long-established subscription journals. When non-open publications don't count at all, that fear will dissolve, and Harvard's goal to "move prestige to open access" will be achieved.

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