

Open access  
publishing

## Becoming The Norm?

BioMed Central, the World's largest open access publisher, has been swallowed up by the publishing giant, Springer. Jeremy Garwood asks whether this is a good omen for the drive towards freely accessible scientific knowledge.

**B**ioMed Central (BMC) is the world's largest open access provider with some 194 online journals. It was launched in 2000 as an independent publishing house committed to offering free access to peer-reviewed research in the biological and medical sciences. On 7<sup>th</sup> October, 2008, Springer Science+Business Media, the world's second largest traditional publisher of journals in the science, technology and medicine (STM) sector, announced that it had purchased BMC for an undisclosed sum.

Derk Haank, CEO of Springer Science+Business Media said, "This acquisition reinforces the fact that we see open access publishing as a sustainable part of STM publishing, and not an ideological crusade."

### No changes involved

Springer publishes over 1,700 journals and more than 5,500 new books a year. With operations worldwide, it has over 5,000 employees and generated sales in 2007 of more than €900 million. In comparison, BMC is based in London with a staff of 150 and revenue of around €15 million. Despite persistent rumours that it is almost there, it seems that BMC has yet to make a profit from its open access business model.

However, BMC were keen to stress that their incorporation into the giant Spring-

er publishing group would not involve any changes to their operations.

Matthew Cockerill, Publisher of BioMed Central said, "We are very excited about this new phase of BioMed Central's growth and development. Springer has been notable among the major STM publishers for its willingness to experiment with open access publishing. BioMed Central has demonstrated that the open access business model can work and we look forward to continued rapid growth as part of Springer. The support of our authors, journal editors and institutional customers has been vital to BioMed Central's success and we will continue to focus on offering the best possible service to these groups."

He sent an e-mail to BMC journal editors assuring them that a BMC board of trustees "will continue to safeguard BioMed Central's open access policy in the future."

Meanwhile, Richard Smith, a prominent spokesperson for the open access movement (see *Lab Times* 02/2008: 18-21), immediately wrote an enthusiastic article in the UK's *Guardian* newspaper, describing Springer's takeover of BMC as "a Great Day for Science."

"Earlier this week," he said, "overshadowed by the collapsing of banks and largely unnoticed, something happened that is very important for the future of science. Ten years from now, that unnoticed event may

prove to be more important than the banking catastrophe." Clearly he sees it as a positive step, "Once all of science is open access – as it surely will be eventually – then the value of our scientific deposits may be greatly increased: the totality has a value that exceeds the sum of the parts."

Evidently Smith sees this as a turning point, "At the moment, fewer than 10% of scientific articles are published open access, but Springer's acquisition may bring us to the tipping point where open access will be the norm."

### Making money from open access

Many less attentive commentators admitted their surprise when learning that BMC could be bought or sold. They had equated open access with free, no cost, living and didn't realise that BMC was a commercial, for profit, company.

Despite hosting and supporting the open access movement, BMC has from the offset been a purely commercial venture. It was established by Vitek Tracz, an online publishing pioneer, who has successfully launched a number of other internet business ventures. In 2006, his Current Science Group obligingly changed its name to the Science Navigation Group when he sold off another part of his business concerns to Springer. Having just made a tidy profit from selling them the Current Medicine

Group, he didn't want to trouble them with a bothersome name change.

The Science Navigation Group also owns *The Scientist* news and views magazine, the *Faculty of 1,000* literature evaluation services, *Global Datapoint*, *Web of Stories Limited*, and *Current BioData Limited*.

---

### More expensive for authors?

In the early 1990's, Tracz also set up BioMedNet, the life sciences web portal, which in 1997 he sold on to Elsevier, currently the world's largest STM publisher. When Elsevier bought BioMedNet, many experts were anticipating that websites would soon generate substantial advertising revenue. For those who see no danger to the future of BMC, it is worth recalling that BioMedNet was shut down by Elsevier in 2004 in order to save costs and concentrate on its own ScienceDirect service.

No doubt, like Elsevier and BioMedNet, Springer made a purely commercial decision when purchasing BMC. But where is the money-making side of BMC's open access business model?

In fact, there are several sources of revenue: advertising within the journals, the selling-on of targeted e-mail addresses to commercial companies (although wise BMC customers will hopefully spot the relevant boxes that exempt them from the subsequent spam), the sale of certain categories of articles, notably reviews, and most importantly, the article processing charge (APC).

Final published articles are freely accessible to anyone over the internet but the authors of BMC journal research articles have to pay an APC, typically around £850-£950. In return for this publication charge, BMC explain that they provide, "immediate world-wide barrier-free open access to the full text", develop and maintain the "electronic tools for peer review and publication", prepare the online formats and get the article into PubMed, PubMed Central and CrossRef. As they demonstrate on their home page, BMC's APC is cheaper than the page charges and publication costs charged by most other STM publishers, whether commercial or academic societies. But after eight years of publishing, it

still isn't clear if BMC has actually made a profit from its operations despite doubling its fees in the meantime.

Nevertheless, in response to worries that seeking a higher return on its investment, Springer will simply hike up the APC, making it more expensive for authors to publish in BMC journals, Matt McKay, Head of Public Relations, insisted that "BioMed Central Limited will remain an autonomous operating unit within Springer Science+Business Media and we have no plans to change our prices." Sure Matt, but what about Springer's plans?

---

### Fusions and acquisitions

Springer Science+Business Media is the product of a whole series of fusions and acquisitions. At its core lies the German publisher, Springer Verlag, which was incorporated into the huge Bertelsmann Media Group in 1999. It was then sold off in 2003 to the British investment groups, Cinven and Candover, who merged it in 2004 with Kluwer Academic Publishers, a Dutch firm they had purchased in 2002. Although the current financial climate might calm their

ardour, such investment groups are typically driven by the need to attain a 15-20% annual return on their investments within five years. To do this they use standard methods of radical cost-cutting before selling off undervalued operations that have been “re-structured” to make them look more interesting to other investors.

### Springer's vision of “open choice”

In 2004, Springer launched its own hybrid open access model, open choice. In this model, anyone publishing an article in one of Springer's 1,900 traditional STM journals could pay to make it freely and openly accessible over the internet.

At the time, Derk Haank, already CEO at Springer, was keen to stress how this business model was designed to service the market's new needs, “The existing traditional subscription model has put us well on our way to efficiently connecting the entire research community electronically. At the same time, however, we want to respond to the demands of the small group of researchers and certain publicly funded research communities who are advocating even wider unlimited access to scientific content and who are in a position to pay for that service. Springer Open Choice is, therefore, not a matter of either/or. We want to offer our authors both options and let them choose. Ultimately, the customers will decide what they want.”

In effect, having gone through all the usual reviewing process for one of Springer's printed journals, authors now have the option, in addition to the traditional page charges and other publication costs, to hand over an additional \$3,000 by “open choice”, making their article openly accessible in its electronic form outside of journal subscriptions or per article sales that otherwise apply to the 100,000 articles that Springer publishes annually.

### Strategic interest in buying BMC

By buying BMC, Springer has spread its bets for the future. It can now boast that it offers authors three publishing choices: the traditional subscription model, the open choice model and BMC's automatic open access model. “All of the business models

are going to grow in the future,” a Springer spokesman told *The Scientist*, adding that they weren't planning to stop adding journals under either the subscription model or the BMC model because no publishing model fits all and no publishing model is for free. “We don't refer to them as business models for nothing. They're not an ideology.”

Nevertheless, buying BMC effectively means that Springer can experiment without first setting up its own online open access publisher from scratch. Also, they've curtailed the risk that a rival might have bought it first.

### Less of a rip-off now?

Alternatively, it may also be a move to protect itself against the increasingly coordinated political protests at the excessive costs of publishing public scientific research.

“Scientific knowledge was never meant to be a commodity – it is an invaluable public good. Publications describing publicly funded research belong in the public domain, where they can do the greatest good

for science and humanity,” says the U.S. Public Library of Science (PLOS), the largest non-profit open access scientific publishing project.

PLOS began as an online petition by Patrick Brown, a biochemist at Stanford University and Michael Eisen, a computational biologist at the University of California, Berkeley. The petition called for all scientists to pledge that from September 2001 they would discontinue submission of papers to journals which did not make the full text of their papers available to all, free and unfettered, either immediately or after a delay of several months.

They were objecting to the realisation that commercial scientific publishers were reaping enormous financial benefits from acting as the middle men controlling, and heavily restricting, the exchange of printed research information between scientific researchers.

In 2003, “An economic analysis of scientific research publishing” by the Wellcome Trust, the UK's largest biomedical research charity, reported that the scientific publishing market was dominated by the

purely profit-making concerns of the commercial publishers at the expense of the needs of the community as a whole.

### Commercial publishers still do well

It emerged that the scientific, technical and medical publishing sector had grown significantly since the 1980's with annual revenues exceeding £20 billion from which publishers routinely attained healthy profit margins of 30-40%.

Mark Walport, Director of the Wellcome Trust, said, “As a funder of research, we are committed to ensuring that the results of the science we fund are disseminated widely and are freely available to all. Unfortunately, the distribution strategies currently used by many publishers prevent this. We want to see a system in place that supports open and unrestricted access to research outputs and we would like to encourage others to support this principle.”

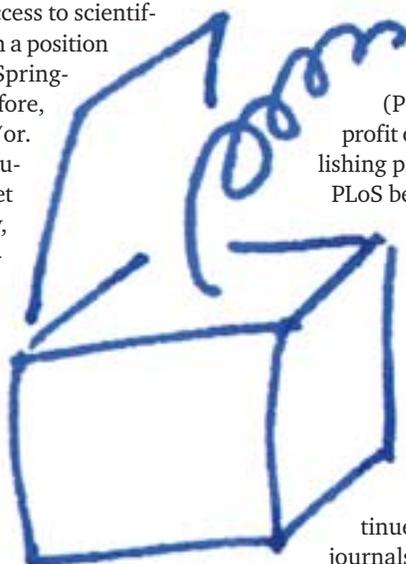
PLOS notes that, despite falling library budgets, commercial publishers continue to do well because the scientific publishing market is not competitive, presenting three key reasons.

Firstly, every paper is unique and each journal is essentially a monopoly. Journals therefore cannot behave like most other commodities because academics need access to all relevant research findings. Librarians have thus sought ways to fund subscriptions regardless of the fees charged by publishers, which might explain why journal prices have increased by more than 225% since 1986, while inflation only increased by 60%.

### Cost transparency

Secondly, researchers are cushioned from the real cost of publication. Authors are unaware of what publishing entails and of the real dissemination costs involved per article. The result is that authors submit their work to journals regardless of whether there are relatively high or low costs per article, given the editorial or production standards. Readers are also cushioned from the costs of subscription because it is librarians that have traditionally negotiated access with publishers. Academics at institutions have, therefore, put pressure on their libraries to maintain subscriptions in the face of above inflation price increases. Making the cost per article transparent would help stabilise prices and provide real choice for authors, institutions and funders.

Finally, there is often a split between funding for scientific research and the research infrastructure in which it takes



place (including libraries). For example, in the UK, government funding for research is awarded via the Research Councils but budgets for library subscriptions comes from the Higher Education Funding Council (HEFCE), among others. Therefore, the cost of disseminating research is concealed from the agencies that fund it.

### Libraries are paying

Ironically, BMC itself fell foul on this last point when, in 2007, Yale University Libraries dropped its subscription to BioMed Central, citing the rising costs to the university. David Stern, Director of Science Libraries, explained that although it had looked reasonable to start with, BMC's charges had become abusive. In, "2005, BioMed Central article charges cost the libraries \$4,658, comparable to a single biomedicine journal subscription. The cost of article charges for 2006 then jumped to \$31,625. The article charges have continued to soar in 2007 with the libraries charged \$29,635 through June 2007, with \$34,965 in potential additional article charges in submission."

In effect, it is often research libraries that are paying for the author's open access APC, no doubt based on the logic that they don't have to pay for a final subscription. However, for traditional journals, the library only pays for the journal subscription, while the authors pay their own publication costs.

### An open access model also for PLoS?

David Stern lamented that, "Virtual savings from lower pricing for the new alternative publication methods have not yet provided any actual savings which could be re-allocated away from traditional journals. While OA has raised awareness of outrageous pricing from certain publishers, very few journals have been significantly impacted yet. Only a few journals have jumped to less expensive publishers; and even then, package plans mean that editorial boards are instantly re-populated by the original publishers with no chance of recovering any savings. Libraries can simply not borrow money today (to pay for possible alternatives) against potential future savings. And

this would assume that a paradigm shift actually does occur."

In 2003, based on the BMC model, PLoS finally became a non-profit publishing company in its own right. It started with *PLoS Biology* and now has seven peer-reviewed PLoS journals. To fund the journals, PLoS also charges a publication fee to be paid by the author or the author's employer or funder. However, it has been heavily reliant upon donations from foundations to cover the majority of its operating costs. It is still far from breaking even despite raising its publication fees from around \$1,500 in 2006 to \$2,850 for *PLoS Biology* and *PLoS Medicine*.

### Thorny questions

A big problem with charging author-side fees for STM publishing is that it fails to recognise the high costs of filtering and evaluating the large number of submissions that the higher impact journals receive. Yes, we're back to the thorny question of impact factors and citation indexes. Because if researchers believe in the numerical magic that such statistical measures can confer upon their articles and the very real material advantages they could gain from publishing in high-impact journals, then inevitably they will go to great lengths to get published in them.

In fact, PLoS did not follow exactly the same business model as BMC. On the one hand, we have BMC that tries to publish as many journals on as many themes as possible (they happily welcome suggestions for new journals). In this way, they generate as much APC revenue as possible from publishing as many articles as possible. In spite of a word length for article abstracts, BMC doesn't even specify page limits for submitted manuscripts. PLoS, on the other hand, has been driven from the outset by a need to attain "quality".

### The tyranny of impact factors

In effect, PLoS wants to publish open access high-impact journals that can rival existing journals like *Cell*, *Nature*, *Medicine*, *Journal of Neuroscience* etc. Unfortunately,

the tyranny of impact factors has a price. To attain their goals of creating a handful of exclusive, elitist, online journals, PLoS has introduced a strict peer-review system with quota limits, perhaps due to a lack of electronic page space.

Despite saying on their website that "impact factors should be interpreted with caution", PLoS maintains a careful calculation of its own journals' rankings and proudly states, "The increases in the impact factors for the discipline-based, community-run PLoS journals also tally with indicators that these journals are going from strength to strength. Submissions to *PLoS Computational Biology*, *PLoS Genetics* and *PLoS Pathogens* have almost doubled over the past year – each journal now routinely receives 80-120 submissions per month of which around 20-25 are published."

Unfortunately, their more stringent review system not only requires more work per submitted manuscript from its editors, office staff and reviewers, it also requires more money. Nevertheless, PLoS can point to its Thomson impact factor of 13.5 for *PLoS Biology*, while BMC can only point more modestly to the 6.87 score of its *Genome Biology*.

However, BMC's 194 journals actually rate quite well when compared to many of Springer's 1,900 largely unconsulted, but expensive, titles. In fact, Springer may even have improved its average impact factor by buying BMC's journals!

### Ideology or economics?

In conclusion, despite the positive noises from the open access movement, it is hard to see Springer's purchase of BMC as anything other than a commercial operation that will continue to seek to maximise profit from scientific publishing, whatever business model it conforms to. Springer says that open access is not about ideology. There are many scientists who beg to differ. The vast majority of scientific literature is the result of research paid for by public funds and charitable foundations. Why must it continue to be exploited in the interests of commercial middle men?

A genuine move to universal open access will require co-ordinated action by researchers, research institutions, and funding agencies to redefine the entire economics of publishing. A truly great day for open access to scientific knowledge might be when a fantasy consortium of, say, the US National Institutes of Health, the UK Wellcome Trust, and the German Research Council combine to buy out Springer.

