Sustainability in open access publishing: The ecancer case study

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INTRODUCTION

Over the past 20 years, there has been a rapid expansion in the number of open access journals, particularly in the field of medicine. It has been reported that, globally, in 2014, 19% of articles were open access immediately upon publication, a figure that rises to 34% after 2 years (Research Information Network, 2015). However, these are estimated figures based on indexed content; the real figure is likely to be far higher as many non-indexed journals are open access. The biomedical field has been a leader in the take-up of the open access (OA) model, making up 35.5% of the total OA article output in 2011 (Laakso & Björk, 2012). The highest number of article processing charge (APC) payments in the UK is made to Health and Life Sciences journals (Research Information Network, 2015). There are, therefore, more opportunities for medical journals to sustain themselves through APCs compared to journals in other disciplines.

The majority of these journals use the Gold (immediate publication usually supported by APCs) or Green (depositing articles in an institutional or subject repository after an embargo period) model of open access publishing, but new income models have been proliferating in the last few years. A third form of open access journals, which has sometimes been referred to as Platinum or Diamond open access, charges no APCs at all (Crawford, 2011). In the Platinum/Diamond model, the costs of publication are covered through diverse alternative means.

Yet another business model, which is even more recent and started out as an initiative within the restaurant industry, has been variously referred to as the pay what you can afford (PWYCA) or pay what you want model. Examples of publishers using this model include Cogent Open Access, part of the Taylor and Francis Group, which launched 15 journals across a wide range of subjects in Spring 2014, and Thieme, which launched The Surgery Journal in Summer 2015. The PWYCA model has now spread to many other industries, including music, theatre, and books.

ecancermedicalscience (http://ecancer.org/journal/journal.php) switched from a Platinum/Diamond publication model to a PWYCA model in January 2014, mainly motivated by the international increase in funding for open access publication. Most of the largest funders of biomedical research now mandate that the results of that research must be published in open access journals (Duranceau, Dunne & Clemente, 2015). Some governments have also mandated that all publically funded research must be made free to access, including the UK. According to the Registry of Open Access Repository Mandates and Policies (ROARMAP), there are currently 748 open access mandates and policies that have been adopted by universities, research institutions, and research funders.

Key points

- Innovative business models to complement or replace traditional models of funding academic publishing are currently proliferating.
- Not relying solely on one source of funding is a key factor in sustainability.
- Pay what you can afford (PWYCA) is a new model for article processing charges (APCs) providing both a revenue stream and an opportunity to raise awareness of the cost of publishing amongst authors.
- Treating a journal as part of an overall enterprise rather than as a stand-alone business contributes significantly to its sustainability.
To take advantage of these new policies, the journal does not charge a blanket APC. Instead, authors may transfer (upon acceptance after peer review) the open access publication fee, which is part of their funding. The journal still publishes articles for free by authors who do not have access to this funding. In this way, the journal is able to carry on publishing research from low or middle income countries (LMICs) and from authors who have little or no funding, but those authors who have access to funds for publication are able to donate them. The suggested APC is set at £1,000, but authors are welcome to pay any amount that they can afford. To the best of our knowledge, ecancermedicalscience was the first oncology journal to adopt the PWYCA model.

This publishing model is still in relative infancy, and APCs currently only fund a small minority of the operating costs of running ecancermedicalscience, which relies mainly on charitable donations, sponsorship, grants and the income generated from running educational activities and events.

**HISTORY**

ecancermedicalscience was launched as a Platinum open access journal in 2007. Its founders, Professors Gordon McVie and Umberto Veronesi, wanted to provide a journal that would be free both to read and publish in so that financial barriers could be broken down in the world of cancer research and communication. They saw that open access had an essential role to play in maximizing the results of medical research. The world of cancer research, which is often fragmented, uncoordinated, and slow in translating benefits to patients, would particularly benefit from such a resource.

It was becoming obvious that the same principles that apply to innovations in research could be applied to innovations in sharing and communicating it. One example is the European Organization of Research and Treatment of Cancer (EORTC) project SPECTAcolor – a Biobank and Biomarker analysis platform for the genetic profiling of patients suffering from advanced colorectal cancer. This initiative was created to solve the problem of biological material being locked away in commercial silos known as ‘butterfly collections’, where it is of no use to other researchers. Denis Lacombe, the head of EORTC, said in Cancer World, ‘Sharing is certainly a challenge, but it’s part of the change of mindset that we need in the new environment... Things are now too complex and too expensive to do by yourself’ (Crompton, 2015).

This possessiveness of knowledge in academia is the issue that Professors McVie and Veronesi, both leaders in the field of cancer, wanted to help to eradicate. Thus, the ECMS Foundation, an independent, not-for-profit organization with charitable status, was established with the aim of funding a new website, ecancer, which was to include an open access journal, ecancermedicalscience. It is the official journal of the European Institute of Oncology in Milan and the Organization of European Cancer Institutes (OECI).

The goal was to create a free single source for cancer researchers throughout Europe to access comprehensive coverage of the latest developments in the field through journal articles, video interviews, and news. The founding principles were therefore not entirely compatible with the Green or Gold open access publishing models, and so ecancer was founded under the Platinum/Diamond model. In order to keep it free for users and free from any industry bias, the website was initially funded only by charities. Since then, the ever-expanding list of revenue streams includes grants, partnerships, sponsorship, awards, and income from educational activities such as running events.

Seed funding provided from the European CanCer Organization (ECCO), Fondazione Umberto Veronesi, the European Institute of Oncology, and Swiss Bridge supported the journal from 2007 to 2010, after which, the journal was expected to function on advertising revenue and voluntary donations. Estimates of potential income were set at £200,000 per year, predicted by initial research. Notably, in the mid-2000s, predictions of journal advertising revenue were inflated beyond their actual potential (Dylla, 2014). It quickly became apparent that advertising would not provide a sustainable income for an online-only journal, and this income stream was quickly discarded. ecancer does acquire a very small income through advertising some conferences and events on the website but is otherwise ad-free.

**DIVERSITY OF FUNDING SOURCES**

With advertising a poor prospect, ecancer identified a new activity that could attract income in the form of sponsorship and thus contribute towards the journal running costs as well as a new and faster way to inform its users of the latest developments in the field of cancer. ecancertv was born, with a remit to film expert interviews at cancer conferences with a minority of these videos being sponsored by industry. A team of staff attends international conferences, recording original interviews with key researchers, producing panel discussions between experts, and filming webcasts. The videos are made freely accessible on the website. Editorial independence is retained by peer-reviewing all sponsored videos. The archive of videos (over 4,500) comprises the largest collection of oncology-based videos on the Internet.

The education team was then formed to take advantage of the interest shown by funding bodies to create free elearning for cancer professionals using video and interactive slides. The team receives funding from European projects, universities, charities, and other funding bodies to create educational content and courses around themes in oncology and cancer research. This often includes funding for publication in ecancermedicalscience.

This development furthers the original mission of the organization by improving the communication and dissemination of the latest developments in oncology through educational modules. Medical education is currently behind the curve in some aspects – ecancer’s elearning modules adapt and build upon cutting-edge content delivery systems developed in other disciplines to advance the field. For example, new developments like clinical scenarios and patient...
simulations are not covered by many other medical elearning courses, and ecancer’s recent three-dimensional modelling innovations are particularly unique.

In 2013, due to a large charitable donation to support and promote Latin American cancer research as well as ecancer’s aim to expand internationally and break down geographical and linguistic barriers, ecancer Latin America was launched. A general public and patient website, ecancerlatinoafrica.com, was created, and Spanish and Portuguese versions of the main ecancer website were also created. Around 15 Latin American conferences are filmed per year, with both Portuguese and Spanish content. ecancermedicalscience accepts submissions in Spanish and Portuguese; they are then peer reviewed and, if accepted for publication, are translated at no cost to the authors. Both the English and Spanish/Portuguese versions are then published.

ecancer also runs events in Latin America, as well as in other areas of the world, on a wide range of subjects in the field of oncology. This is another way for the organization to support the community it serves as well as bring in extra revenue to maintain the journal. Our Latin American arm is supported by the academic legitimacy that the journal confers, while the charities and funding bodies that invest in the dissemination of Latin American research in turn help to sustain the journal activities. The service which ecancer provides is particularly beneficial to the Latin American region as cancer frequency rates are ~ 60% higher in Latin America than North America and Europe (Goss et al., 2013), and this is generally attributed to late diagnosis, poor access to treatment, and lack of prevention strategies; so the greater access there is to the latest research and treatment options, the better.

ecancer is also involved in a variety of medical research projects, usually as the dissemination partner. These projects are often funded by the European Commission (FP7/Horizon2020) or by cancer charities, universities, or industry as part of their educational outreach. The different areas of ecancer all contribute towards the dissemination of the research findings, whether through peer-reviewed articles, videos, custom-built websites, or education modules.

In 2014, after 7 years without charging APCs, we decided to trial a PWYCA initiative. This was mainly in response to the increase in research funder and government mandates that all the results of research that they fund must be made open access. We also felt that the journal was now offering a very high-quality service to authors, and it was reasonable to expect those who could afford it to pay towards the costs of publication. Submissions decreased by around 20% during the first quarter, although this cannot be conclusively linked to the new payment model but by June 2014, had recovered to their former level. This is in line with the experience of other publishers who have brought in this publishing model – Cogent OA said, ‘Submissions initially decreased by 75% but have since recovered. 55% of authors are opting to pay something, some authors are paying more than the recommended APC’ (Vickery, 2015). Around 13% of ecancermedicalscience authors have so far paid either the full suggested APC of £1,000 per article or part of it. This is consistent with the level we would expect as the majority of our authors do not have funding for open access publication.

**COMMUNITY RECIPROCITY**

Thus, the journal upholds editorially independent scientific values while drawing attention to the other diverse activities provided by the company. In turn, these other activities provide financial support for the journal’s operating costs as well as bringing it to the attention of a wider group of potential authors and readers. The goodwill generated by the fact that all the content on the ecancer website is free to access gives rise to a relationship of mutual trust as well as the assurance that the site is free from bias. The expert opinion and guidelines contained on the site come ‘straight from the horse’s mouth’ from trusted sources, and the journal is a member of various organizations that ensure that best practice is followed, such as the Committee on Publication Ethics (COPE), the Organization of Open Access Scholarly Publishers (OASPA), and the Directory of Open Access Journals (DOAJ). The journal uses the CC-BY 3.00 copyright licence – the most unrestricted licence that allows the highest level of access to its articles and the least amount of constraint to its authors. ecancermedicalscience is indexed in PubMed, PubMed Central, Scopus, Embase, EBSCO, the Emerging Sources Citation Index (ESCI) via Web of Science and Google Scholar.

This goodwill also extends to ecancermedicalscience’s authors; because they are not required to pay an APC unless they can afford it, they are perhaps inclined to engage with the journal more, leading to repeat submissions, recommendations to their colleagues, and offering to act as peer reviewers for the journal. It also means that it is very clear to authors that ecancermedicalscience is not a predatory open access journal, of which many examples have proliferated in recent times (Shen & Bjork, 2015).

One author, Professor Ian McGrath of INCTR, Brussels, Belgium, commented that, ‘I know journals have to make a profit somehow, but that should not be at the cost of preventing dissemination of information except to those who pay an annual subscription’. The dissatisfaction that many authors feel concerning the large profit margins of many scholarly publishers, typified by such movements as The Cost of Knowledge, contributes to the mutually beneficial relationship that underpins ecancer’s activities.

Community reciprocity is therefore an interesting facet of the sustainable model. Certain journal activities are supported by the greater community in recognition of mutually shared ideals. Our representation at conferences is often supported by conference organizers due to our non-profit status. Authors from low-income countries without open access funding who have been particularly pleased with our dissemination efforts have even donated a token sum out of their own pockets. While community reciprocity cannot be expected to fund a journal, it connects to our ideals of sustainability and serving the community to which we belong.

The academic publishing landscape has fundamentally changed within a few short years. The Internet has, at once, advanced our
capabilities for outreach and equalized our audience. In the resulting competitive market for attention, audience expectations are high, while the range of audience backgrounds and incomes is increasingly diverse. The PWYCA model is a reflection of the needs and goals of this audience and an endorsement of the importance of reciprocity. Importantly, it is a reflection of the larger values of the millennium, which has already seen surprising changes in fundraising strategies at every level, including crowdfunding clinical trials.

ecancer recently took part in dissemination efforts for such a trial, publishing an editorial by the authors of an initiative that will be the first publicly crowdsourced clinical trial in the United Kingdom (Augustin, Krishna, Kumar, & Pantziarka, 2015). As author Dr Yolanda Augustin explained, ‘This approach potentially engages patients and the public to a greater degree than the traditional commercially-sponsored clinical trial’.

Thus, community reciprocity and the PWYCA model tie back into the question of what the open access movement can do for patients. We invite a reciprocal relationship with our authors as well as making their findings freely accessible to the public, who are increasingly invited to access research information, interact with research, and support research directly. This creates a circular flow of benefit that we believe is at the core of sustainability.

Not relying solely on one source of funding is also a key factor in sustainability. Because Gold OA often involves providing discounts and waivers to authors from LMICs, supporting those authors does incur extra costs for the publisher. Also, many universities and scholarly societies are finding the costs of paying APCs on top of continuing to pay for subscription fees hard to meet (exacerbated by the growth of hybrid journals that has led to a practice known as ‘double-dipping’), which raises doubts as to the viability of the Gold model (Research Information Network, 2015). The ecancer model means that the journal is not relying mainly on APCs to sustain itself but has other diverse sources of funding.

Thus, we are not relying on the PWYCA model as a business model on its own – although it brings some money into the organization, we do not feel that it is a robust enough stream of income to support our journal entirely, and it would be optimistic for publishers to rely solely on this to pay their costs. However, that being said, the PWYCA model is still at an early stage, and experiments with it have yielded very positive results in some other fields. An interesting example is the Data Science Handbook, whose authors found that they expanded the readership of their book by up to four times and also earned much more revenue than they expected (Chen, 2015). The authors made the point that the PWYCA model can be used as a very effective marketing tool as well as generating income.

It is also worth pointing out that we saw the introduction of the PWYCA concept as a way to make it more obvious to authors how much it actually costs to publish an article (from submission to online publication). Thus, we arrived at the suggested donation of £1,000, which is roughly the cost of staffing, editing, typesetting, producing, and promoting a paper. Many authors are not aware of the real costs involved in running a journal, and raising awareness of this among ecancer authors, who had not been charged since the launch of the journal 7 years previously, would hopefully positively enhance their perception of the quality of the product.

THE FUTURE

The ideal financial future of ecancermedicalscience is one in which all authors who can afford to, contribute their open access funding directly towards the cost of publishing their articles. We do not envisage this ever being the majority of our authors as a core goal of the journal is to support authors who want the results of their research to be open access but cannot afford to pay an APC, whether this is because they are from an LMIC or because their work is not funded.

One example of the importance of free publication is the Repurposing Drugs in Oncology (ReDo) project http://www.redo-project.org/ (Pantziarka & Cairns, 2014). This organization researches a wide range of drugs that may be suitable for repurposing due to their anticancer properties. The group is funded entirely by charity and so cannot afford to pay APCs, yet it is very important that their work is open access as it has far-reaching benefits for researchers and patients in LMICs as well as high-income countries. ecancermedicalscience has published eight of these articles so far for free and does not envisage charging the authors in the future.

Therefore, ecancermedicalscience will continue to rely on charity, sponsorship, grants, and income from our educational activities in order to carry on providing a free publishing service to those who need it. We will make sure that the journal keeps up with advances in scholarly publishing as this is important to our authors and readers. In recent years, we have brought in innovations such as Article Level Metrics, which provide users with the ability to track articles across the internet and gain a real-time insight into what impact each article is achieving. The journal also has a professional article management system, has rigorous peer review standards, and is indexed in all the main repositories. This is an extremely important service that all journals should provide but is especially important in the medical field due to the impact on patients and society as a whole. All articles are marketed through social media, and press releases are regularly sent out. All authors are invited to be filmed talking about their paper, a service we usually carry out at conferences, which offers them more publicity for their work. It is essential that the journal offers the highest-quality service possible to its authors and readers.

It should be noted that, in general, open access is becoming a much more recognized and accepted model of publication. A recent survey of academics undertaken by Nature Publishing Group and Palgrave Macmillan found that perceptions of OA journals are improving, and they are becoming more accepted as a normal model, with only 27% of respondents reporting concerns about quality in 2015 as compared to 40% in the previous year (Bourke-White, 2015). This has positive implications for the sustainability of open access journals, particularly if they ensure high-quality standards.
CONCLUSIONS

It is possible to build a competitive, attractive publishing model on the ideals of self-sufficiency and fair access. The key is to innovate and to take advantage of new technologies, policies, and developments in the world of scientific research and publishing. Treating a journal more as part of an overall enterprise rather than as a stand-alone business contributes significantly to its sustainability as it can be supported by cross-allocation of organization funds. We have found that a diversity of income streams – and a diversity of offerings – is required to achieve sustainability. Following these principles, ecancer has grown from a core team of three in 2007 to a current total of 22 members of staff.

The success of ecancer proves that it is possible to publish a quality academic journal at very low cost to the scientific community it serves. Not only is every piece of content on the website free to access, but the wide variety of media, the multilingual content, and the unrestricted nature of the journal’s copyright licence enables the free flow of scientific communication, which is ultimately of benefit to all. Publishers of scientific journals, and particularly medical publishers, have a responsibility towards scientists and society as a whole to ensure that the content they publish is as rigorously peer reviewed as possible and as easily shareable as possible.

As Jennifer Hansen, from the Gates Foundation, put it at the COASP15 open access publishing conference: ‘What we do is complicated, the reasons we do it are not’.

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