“Hybrid gold” is the most appropriate open-access modality for journals like Medical Physics

Samuel G. Armato III, Ph.D.
Department of Radiology, The University of Chicago, Chicago, Illinois 60637
(Tel: 773-834-3044; E-mail: s-armato@uchicago.edu)

Clive Baldock, Ph.D.
University of Sydney, Sydney, New South Wales 2006, Australia
(Tel: 61 413 324 829; E-mail: clive.baldock@gmail.com)

Colin G. Orton, Ph.D., Moderator
(Received 29 August 2014; accepted for publication 5 September 2014; published 11 December 2014)

[http://dx.doi.org/10.1118/1.4895979]

OVERVIEW

The move to provide unrestricted free online access to articles published in peer-reviewed journals is progressing rapidly and is believed by most to be inevitable. There are essentially three methods to provide such access known as “green,” “gold,” and “hybrid gold” open access (OA). With green open access, authors self-archive their articles immediately upon publication in an open repository, whereas with gold, the journal itself provides free immediate access online to all articles it publishes. Both green and gold open access essentially make hard copy versions of journals superfluous. Thus, for journals like Medical Physics which are owned by scholarly societies (in this case the AAPM) that rely on print advertising revenue to support their activities, gold open access could jeopardize this income, leading some to propose an intermediate form of open access known as hybrid gold. With hybrid gold, authors may, if they wish, pay a fee to have their articles published free access immediately on the journal’s website. That this is the most appropriate open-access modality for Medical Physics is the premise debated in this month’s Point/Counterpoint.

Arguing for the Proposition is Samuel G. Armato III, Ph.D. Dr. Armato earned his B.A. in Physics and Ph.D. in Medical Physics from the University of Chicago. He has worked in the Department of Radiology at the University of Chicago since 1991 and is currently Associate Professor, Chair of the Committee on Medical Physics, and Director of the Graduate Program in Medical Physics. He is a Fellow of the AAPM and has been very active on AAPM committees, including Chair of the Journal Business Management Committee and member of the Medical Physics Editorial Board. His major research interests include computerized image analysis, especially for lung CT scans for mesothelioma and lung nodule detection, for which he has had a number of grants and patents and has published over 70 papers in peer-reviewed journals. Dr. Armato has been very active in teaching at the University of Chicago and has supervised the research of numerous undergraduate, graduate, and postgraduate students.

Arguing against the Proposition is Clive Baldock, Ph.D. Dr. Baldock graduated from the University of Sussex, Brighton, United Kingdom in 1987 with a B.Sc. (Hons.) in Physics and was subsequently employed as a trainee medical physicist at Guy’s Hospital, London while studying for his M.Sc. in Radiation Physics at St Bartholomew’s Medical College, University of London. He subsequently worked in a number of UK hospitals providing scientific support to clinical nuclear medicine and MRI services. His main research interests were in the field of the MRI of radiation sensitive gels for improved 3D radiotherapy dosimetry for which he received his Ph.D. from Kings College, University of London. Dr. Baldock moved to Queensland University of Technology, Brisbane, Australia in 1997 and subsequently worked at the University of Sydney as Director of the Institute of Medical Physics and then as Head of the School of Physics. Until January 2014, he
was Executive Dean of Science at Macquarie University in Sydney. His current research interests continue to be in the fields of radiation therapy, dosimetry, and medical imaging on which he has published over 140 research papers. He has been awarded Fellowships of the Australian Institute of Physics, the Australasian College of Physical Scientists and Engineers in Medicine, the Institute of Physics (UK), and the Institute of Physics and Engineering in Medicine (UK).

FOR THE PROPOSITION: Samuel G. Armato III, Ph.D.

Opening Statement

Open-access publishing is not new to Medical Physics. For the past several years, the Journal has made select categories of published articles available online without charge to the world. The rationale behind this free content is simple: articles deemed to be of high impact or to provide a special service to the medical physics community, draw readers to articles deemed to be high impact or to provide a special service to the medical physics community, draw readers to exposure to potential future authors of submissions to the Journal, which encourages an expanded reader base, exposure to potential future authors of submissions to the Journal, and possibly greater subscription revenue (or AAPM membership).

Beginning last year, research articles accepted for publication in Medical Physics also could become open access through authors voluntarily exercising the option to pay an article processing (or publication) charge (APC). The APC was set at $2500, a figure that approximately represents the cost to publish a single article in the Journal under the current model that includes both online and print versions. This “author's choice” option to designate individual articles as open access transformed Medical Physics into what is known as a hybrid gold open access journal and, in my opinion, moved the Journal forward in the scientific publishing world.

The open-access movement has evolved a number of variations to meet the needs of different journals, different groups of authors, and increasingly, different funding agencies, author institutions, and governmental bodies. The approach that is most frequently associated with the term “open access” is the “gold open access” model, in which the entire content of a journal is online and freely available to anybody immediately upon publication/posting; the concept of journal subscriptions ceases to exist when a journal is gold open access. Recently, a series of open-access mandates has been enacted by, among others, the Wellcome Trust, the Harvard University system, and the United Kingdom. This trend, combined with the growing success of open-access journals, has transformed the open-access paradigm (once considered by some to be an interesting but unsustainable experiment) into a seemingly more permanent feature of the scientific publishing landscape.

So, existing subscription journals have a choice: either hold firm to the traditional in the hopes that a continued preference and APC payment), the AAPM's Journal Business Management Committee and the Editorial Board have more firmly established the Journal in the open-access world and have developed a publication model that can, without significant additional effort or risk, either actively follow the evolving landscape toward a full gold open-access journal or fully reinstate the traditional approach should the open-access movement wane. I believe that the prestige of Medical Physics will remain high and that authors will continue to desire to submit their best work to the Journal; however, economic forces and principles that reject the traditional subscription model for scientific communication may leave some authors no choice but to go elsewhere. Hybrid gold open access ensures that Medical Physics is in a position to withstand this complicated situation.

AGAINST THE PROPOSITION: Clive Baldock, Ph.D.

Opening Statement

From the time journals were first published in London and Paris in the seventeenth century, scientists have been able to share their work with a wider audience. Over time, a particular business model developed in which interested readers would subscribe to commercially published journals either individually or via their institutions. Since the 1980s, journal subscription charges have risen significantly faster than inflation causing a so-called serial pricing crisis for many institutional libraries. Further, barriers erected by publishers have limited access to academic research that many thought should be freely available, particularly if financed via public funds.

In 1994, cognitive scientist Stevan Harnad posted a Subversive Proposal to a mailing list calling on researchers to make copies of all their published papers freely available on the Internet. Subsequently the term open access was adopted at a meeting where the Budapest Open Access Initiative was initiated, and the OA publishing movement was born. The OA movement has continued to grow significantly over the years with implications for scholarly research, for-profit publishers, and not-for-profit societies such as the AAPM that publish journals such as Medical Physics.

The introduction of the hybrid-gold OA publishing model in which journals charge authors an APC to make individual published papers freely available in subscription-based toll-access journals was considered to be an intermediate publishing stage on the journey from the original toll-access form to that of full-gold OA. It was assumed by many that, as more articles were published as hybrid-gold, the income from the associated APC would enable journals to move away from subscription-based toll-access with the cost being met by the author and not the reader/subscriber, thereby enabling members of the public and individuals in developing countries, among others, to have free access to published papers.

At the beginning of 2013, the Editorial Board of Medical Physics and the AAPM Journal Business Management
Committee agreed to add the hybrid-gold OA feature to what had until then been a toll-access journal.\textsuperscript{2}

There has been much debate regarding the success of hybrid-gold OA publishing with many considering it not to have fulfilled its potential. Hybrid-gold OA journals have consistently been accused of double-dipping, i.e., charging authors an APC for hybrid-gold OA whilst also continuing to charge a subscription fee for the same journal that the author or their institution/institutional library has to pay for toll-access.\textsuperscript{11} Further, hybrid-gold OA journals are considered low risk for publishers because they still receive subscription income regardless of what has been a low uptake of hybrid-gold OA by authors.\textsuperscript{12}

Rebuttal: Samuel G. Armato III, Ph.D.

The decision to begin a new gold open-access journal involves a thought process, business plan, and level of risk that are much different from those involved in the conversion of an existing subscription-based journal. For a highly regarded, financially sound journal such as Medical Physics, such a conversion, should it occur at all, must be undertaken prudently. My colleague is correct in stating that hybrid gold open access is considered an “intermediate publishing stage” in the transition from a subscription-based model to full gold open access: this statement precisely captures the motivation behind the decision to move Medical Physics in this direction.

The transition to gold open access is even more complicated for a journal that has a paper version, since gold open access only makes practical sense for an online-only journal. The conversion of Medical Physics to full gold open access first would require the elimination of the print version of the Journal, which would necessitate an overhaul of the advertising revenue stream—sponsors are not simply moving their advertising dollars from print to electronic when journals abandon paper. While the Journal is not in a position to absorb the burden of two major transitions at this time, the hybrid gold open-access approach allows the Journal to satisfy a need that has been expressed in various ways by a subset of authors and funders.

The Journal has an obligation to mitigate the impression of “double-dipping,” as referenced by my colleague. Accordingly, the fraction of authors who opt to make their Medical Physics articles open access will factor into future subscription-rate decisions.

I agree that “the OA movement has continued to grow significantly over the years with implications for scholarly research, for-profit publishers, and not-for-profit societies such as the AAPM.” The hybrid gold open-access model could be an important stepping stone for traditional journals that seek to become part of that movement.

Rebuttal: Clive Baldock, Ph.D.

The original intention of Tim Berners-Lee in introducing to CERN the information management system that went on to become the World Wide Web was to facilitate the sharing and updating of information among researchers at his institution. The Web has subsequently transformed our lives and revolutionized many industries such as banking, travel, publishing, and even pornography amongst others. Considering that the Web started as an information management system, it is perhaps ironic that the open sharing of information in the form of journal publications has not been transformed; the traditional journal publishing model is still very much in place in spite of the growth of OA.

It is far from clear how the OA phenomenon will develop and what eventually will be the steady-state destination of journal publishing. Some have argued that either full green and/or gold OA is the likely ultimate outcome with no long-term future for hybrid-gold OA publishing. Further, Stevan Harnad, author of the original Subversive Proposal, has referred to hybrid-gold OA as fool’s gold, the rationale being that, if there is a subscription journal that offers hybrid-gold for a price, authors would be foolish to pay for hybrid gold when they can provide green OA for free (by self-archiving) with “no need for subscription publishers, who are already abundantly well paid via their subscriptions, to be double-paid for articles that authors foolishly pay to make Gold OA.”\textsuperscript{15}

Submissions to the United Kingdom Government Finch Review in 2012 into expanding access to published research findings\textsuperscript{13} indicated that, should all journals end up as gold OA, a significant impact will likely be felt by learned and scholarly societies (such as AAPM) that rely on revenue from the publishing of journals for significant income to fund their societal activities for the benefit of their members and the wider community.\textsuperscript{14}

Should the OA evolving landscape ultimately determine that Medical Physics reaches the full gold OA destination, then perhaps, to this end, the AAPM should proactively plan for a future in which this comes to pass, where there will be a reduction in a revenue stream with new sources of income needing to be developed within the framework of a new business model for the Journal.

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