

Scholarly Communication at the Crossroad: From subscription to Open Access?

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Abstract:

Recent developments in the scholarly communication ecosystem toward open access (OA) have become highly complex in how researchers discover and use information, create, and select publication venues to disseminate their research. Institution policy makers, grant funders, publishers, researchers and libraries are coming to grips with the flux in OA publishing. What is expected is that OA will secure a growing market share, with major funders pushing OA mandates with timelines and publishers launching new OA versus traditional journals. Libraries have a critical role to play in resolving the complexities resulting from the impending 'flip' of journals from subscription to OA. The University of Hong Kong (HKU), being the foremost research institution in Asia, has experienced YOY double digit growth in gold open access publications in recent years. From the collection development perspective, there is an urgent need to understand the trend in research output in order to reassess the resources budget allocation and expenditures to accommodate the needed funding support for OA publishing. This paper presents the strategies adopted by HKU in preparing the budget transition toward OA publishing and to strengthen the library's negotiating power in securing sustainable big deals that factor in support for researchers to go the OA route. The value for money, challenge and risk of committing in multiyear big deals without accounting for publishing expenditures in OA contents will be discussed. Analytics on research output, journal subscription and article publishing expenditures will be used to inform the bigger picture of funding access to scholarly contents.

Keywords: open access (OA), scholarly communication, open access publishing, OA policies, OA expenditures, OA funding, University of Hong Kong

Scholarly publishing in transition

Open access to scholarly contents has become a critical part of the equation in evaluating what and how much subscribed scholarly resources are really needed to support the institutional mission given the critical mass of OA resources available. When the traditional subscription model in which libraries pay to read begins the shift toward an OA model in which authors pay to publish with an author publication charge (APC), this shift will disrupt the market that traditionally operates a subscription model and will have ramifications on the funding of research publications. A report from Simba Information highlights the change in business strategy toward an open access (OA) model.

Once a fast growing, predictable and inflation-proof market, scientific and technical publishing is now mostly flat and increasingly subject to rules imposed by research funders to make articles and data available for free... Even the largest publishers, those most invested in the legacy subscription business model, have found open access (OA) useful in launching new journals because it better matches costs and revenue in the uncertain startup stage of a journal. S&T publishing sales will remain overwhelmingly reader and library-pay, but open access' place in the market, and its rules, are now secure — publishers must come to grips (Simba Information, 2017).

Pinfield and Johnson summarize the growth of the OA market to report that “globally the proportion of all scholarly journal articles accessible immediately upon publication, which includes gold or full OA, hybrid APC articles, and green OA, accounted for about 25% of global scholarly articles in 2016 compared to 18% in 2014” (Pinfield & Johnson, 2018). These percentages are contrasted by a slightly higher percentage reported in the UK alone with 20% of OA articles in 2014 increasing to 37% in 2016 (Research Information Network et al., 2017). In order to achieve a tipping point with immediate OA contents by 2020, an annual growth rate of 25% since 2014 would be needed (Research Consulting et al., 2017). Given the current trend in OA content growth has slowed to 10-15%, with growth from 2014 through 2017 reported at about 16% annually (Outsell Report, 2015), the tipping point will be extended to 2024 (Research Consulting et al., 2017) Nevertheless, the outlook for 2018 growth in revenue is estimated at 15-20% over 2017, in excess of \$500M in 2018, outstripping the underlying STM publishing market's annual growth of a low single digit percent (Pollock, 2018).

Progressive role of libraries

In academia, the shift and transformation in the scholarly communication ecosystem, how faculty researchers create, seek and decide on publication venues have been exacerbated by open access options. Faculty researchers generally lack awareness about the licensing costs of access and different cost models of full OA versus hybrid OA, and welcome librarians to inform about the market situation and the new cost and business models. The University of Hong Kong (HKU), being the premier higher education institution in Hong Kong and Asia and a major contributor to high-quality research output, embrace the larger global OA movement and collaboration to leverage support for OA initiatives. With respect to scholarly

communication, the Libraries at the University of Hong Kong currently support the hosting of its institutional repository with a set of institutional OA policies, and offer consortial support in publisher OA initiatives through contributions to Arxiv and SCOAP (The University of Hong Kong, n.d.).

The progressive role of the library within the scholarly communication workflow as provider of scholarly resources seek reasonable understanding of the shift toward open contents in terms of publishers' diverse business strategies in satisfying both the traditional subscription and OA models of publication. It is argued that the library has an essential role in the scholarly communication process and in a well position to take up the management of publication costs in a 'fiduciary role' in managing research publications (University of California Libraries, 2016). Subscriptions and all APC-related costs at institutional or national level, including fees in hybrid journals, are an integral part of the overall publication costs in scientific systems (European University Association, 2017). It is recognized that every institution, either directly from the researchers or through the funder's initiative, is already paying a fair amount for OA publishing.

Budget challenges in funding research publications

In finding the strategic direction for the next round of *Big Deal* negotiations with the five major core publishers, HKU has begun to collect data on research output and conduct analysis on the hidden costs of publication for HKU researchers. These findings will be useful to inform our stakeholders whether any impending flip in subscription pricing model or the 'offset' license agreements, common in UK and some European countries to accommodate OA charge, may be a viable option in HKU's case. The aims of the study is not only to assess the projected publication expenditures as a stake to access to research output, but also to challenge rising subscription expenditures, despite a flat ST publishing market in an environment of slow growth in library materials budgets. Raising awareness through a review of total publication expenditures and assessing the cost implications on funding both publication streams, the traditional subscriptions and OA funding, will better inform libraries and stakeholders the impact on library budgets and services. This data is crucial in guiding renewals of journal subscriptions, particularly in the case of the core publisher big deals.

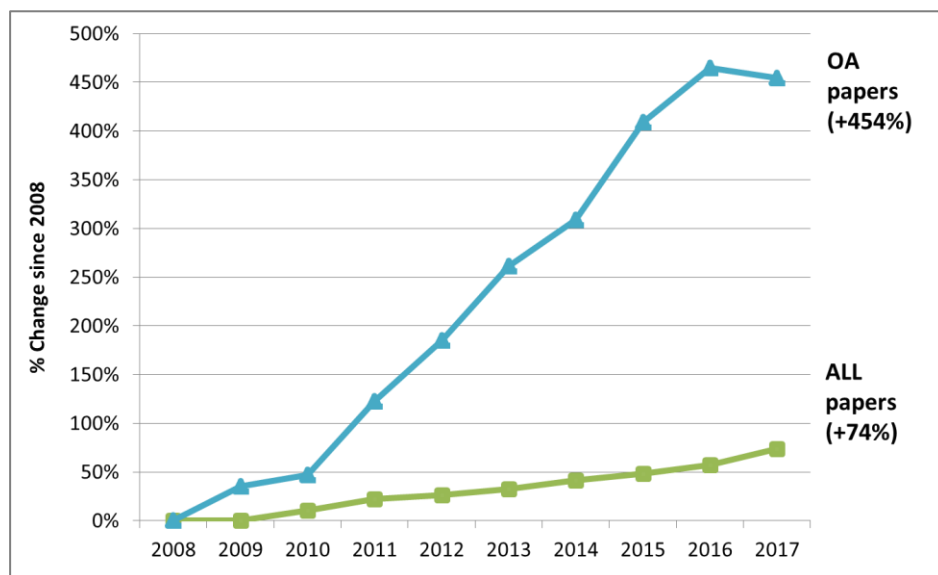
We began with the following research questions to explore HKU's publication and expenditure situation in shifting toward OA.

- Current trend of OA article output versus traditional non-OA article output
- Top journals that HKU researchers publish in, OA vs. non OA (SCOPUS)
- Growth of OA publishing
- Publication expenditures for full OA journals and projected expenditures for hybrid journals versus subscription expenditures

Growth of open access article publications at HKU

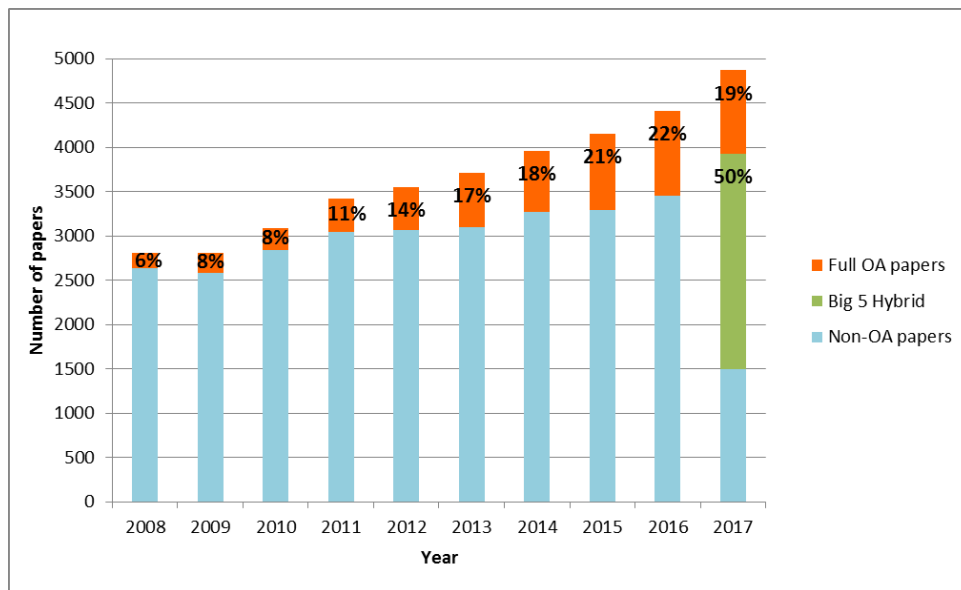
The growth of OA papers has been progressive within the last 10 years from 2008 up to 2017, with a cumulative increase of 454% of OA papers since 2008 compared to an overall 74% growth in total publication output (Figure 1). This trend shows steep growth for articles published in full OA journals compared to relatively flat growth in traditional subscription journal articles. Among the 4871 papers published in 2017, 942 or 19% are published in full OA journals (Figure 2). The top five journals in which HKU researchers publish include three OA and two subscription based journals, led by two top OA mega-journals, *Scientific Reports* and *PlosOne*.

Figure 1. HKU: Growth of OA papers vs. total articles 2008-17



In terms of publication expenditures, in 2017, HKU researchers paid an estimated total APC amount of USD1,520,328 for 736 full OA articles in 233 OA journal titles that charge an APC, with minor discrepancies resulting from special author discounts and possibly fee waiver. The remaining 206 full OA articles were published in 55 OA journals that did not charge any APC. The projected APCs that would incur in hybrid journals of the 5 major publishers (Springer Nature, Elsevier, Wiley, Taylor & Francis and Sage) additionally amounts to approximately USD7.1 million for 2429 articles published in 1255 hybrid journals. It is known that at least a small number of HKU researchers opt to pay for the APC in hybrid journals from their research funding, given that the Libraries have been supportive in OA initiatives such as the Springer Open Choice. Expenditures in hybrid journals are only a projection because there is no central system to track the administration of APC within the researchers' workflow.

Figure 2. Overall trend in OA article output as a percent of total



Addressing the budget challenges

In line with HKU OA policy and as a result of supporting the growth in published papers in both subscription and full OA journals, it appears that HKU researchers have at least paid a large top-up or USD1.5 million in publication expenditures to publish their papers in OA. This excludes the projected or estimated amounts of USD7.1 million in APC which could be paid to give an article immediate OA status in hybrid journals. The source of funding APC is either from RGC (Research Grants Council of Hong Kong) research grant or an external grant funding or from the pocket of the researcher. At the same time, HKU library is paying inflated incremental amounts annually to license journal subscriptions and core publishers' big deals. The expenditures for publishing OA articles are in excess of subscription expenditures paid to publishers of full OA journals. HKU may argue that offset license agreements, which factor in the compensation to an institution for the extra money they are putting into the system through payment of APCs that contribute to an affordable transition to OA might well be considered as a pragmatic approach, especially in the context of diverse publisher strategies to support both OA and subscription models (Kingsley, 2017). The fact is that no offset agreements are currently offered to Hong Kong institutions by any major publisher.

Publisher offset agreements that push for reduction in subscription costs as well as an increasing proportion of OA articles, have been conducive in Europe, UK, though to lesser extent in North America and other parts of the world. It is observed that funder initiatives in UK and EU have been the real driver behind the increase in OA articles. For instance, The EUA (European University Association) strategic direction treats subscriptions and all APC-related costs at institutional or national level, including fees in hybrid journals, as an integral part of the overall publication costs in scientific systems (European University Association,

2017). The OA mandate of research grant funders in EU, Research Councils of UK, Wellcome Trust, Horizon 2020, etc. prescribes that universities set up own central funds to administer all the payments, then get reimbursed from the central funds (Pinfield & Middleton, 2016). The OA2020 initiative, an outcome from the 12th Berlin Open Access Conference in 2015, is committed to finding an OA publishing model to repurpose funds now spent on subscription journals to support OA publishing (Samberg, 2018). Offset agreements are granted subject to the libraries' argument that continuous increase in the share of articles published in OA contradicts maintaining an access agreement of increasing subscription costs (Research Information Network et al., 2017).

For HKU, the projected APCs for articles in hybrid journals would be far too great to realize with the annual library budgets alone, although offset agreement may offer incentive as a transitional attempt to reduce the APC expenditures for researchers, but this is just the tip of the iceberg. In the meantime, publishers adopt diverse OA strategies with full OA among hybrid journals, leading to emergence of mixed OA models. Libraries globally, especially in UK and Germany, where institutions supported by the OA2020 initiative, may anticipate the shift of funding models from subscription model to one that supports APC to grant open access, although it is still early to tell that the flipped OA model is to be recognized as the preferred and economically sustainable business model among the critical mass of commercially licensed journal contents. Top publishers are delivering vast amounts of OA contents and continue to offer incentives to appeal to authors to publish OA, but as long as the numbers and distribution of OA articles prove insufficient to flip individual journals completely into OA, the OA marketplace remains one of complements, not of substitutes (Anderson, 2017).

Future directions

The HKU study indicates that HKU researchers could be paying far more than the current library budgets to fund the scholarly publication process. Gold and hybrid article charges will only increase going forward and cannot be neglected. From the library's perspectives, it is strategic to collect the appropriate supporting data on research publications and expenditures in negotiation for an affordable transition to OA. In the process, it is critical to raise awareness of the current model of funding OA by engaging in dialogues with stakeholders who typically fund APC and publishers who develop the business model. The OA publishing costs should ideally be factored into the overall publication costs in consideration of the institutional site licensing costs in delivering access to the same scholarly contents. At this point in time, it is debatable that transformational agreement in APC approach is viable for Hong Kong since currently there are no central funds for APC made available to researchers in Hong Kong. It is envisaged that library's role as the bridge among stakeholders (institutional funders, researchers and publishers) to develop the support system for monitoring publication expenditures and to negotiate favorable licensing terms for publication and costs of access, will gain greater importance in accelerating the transition toward open access.

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