

The 5th SPARC Japan Seminar 2011

"Burgeoning Open Access MegaJournals"

About Open Access Journals

Yui Nishizono

(DRF, Kagoshima University Library)

Abstract

Under the rapid development of distribution of academic information and with a series of major commercial publishers' entering the market, Open Access Journal draws increasing attention more than ever before. Especially Open Access MegaJournal brings changes not only the distribution but also the begriff of scholarly communication about a way of publication or the evaluation of research achievements. I'll outline it briefly to share common understanding before discussions on Open Access publishing both now and in future.



Yui Nishizono

I have worked as a library staff since 2003 and being engaged in Institutional Repository tasks and others.

Since 2011 I join Digital Repository Federation (DRF) sub-WG of planning and training.

Costs of Open Access Journals

Open access journals and articles have been increasing yearly, and it was reported that articles published in open access journals are estimated to have accounted for 7.7% of the total number of articles published in all peer reviewed journals in 2009. Open access journals have the business model under which authors bear publishing costs that readers have shouldered previously as subscription costs. Regarding these cost burdens, in many cases, attention focuses on the Article Processing Charge (APC) paid by authors. But there are actually multiple sources of revenue for publishers, including membership fees, advertising, sponsorships and subscription fees for publications in book form. The composition of these revenue sources appears to be different depending on the size of publishers.

Few authors individually pay the APC, and in a growing number of cases, the institutions that authors are affiliated with and funding agencies pay the APC for them. Such support by affiliated in-

stitutions and funding agencies is expected to encourage authors to submit articles to open access journals and promote competition with journals with the subscription fee model. Among good examples of the mechanism of support by affiliated institutions is the Compact for Open-Access Publishing Equity (COPE), for which a total of 16 institutions, mainly Harvard University and other universities in North America, have currently signed up. The institutional membership system is also being developed to allow researchers belonging to member institutions to submit their articles without having to pay the APC individually. Furthermore, as an example of open access journal funded by the research institution itself, we can cite the Science and Technology of Advanced Materials journal of the National Institute for Materials Science (NIMS). As another form of the mechanism of institutional support for open access, there is the initiative called SCOAP³, designed to help put existing journals on the course of open access by real-locating funds previously earmarked for subscrip-

tion fees to cover open access publishing costs.

When researchers of developing countries cannot afford to pay the APC, they may be exempt from APC payments. In this case, publishers may be deemed to bear publishing costs, but needless to say, publishers are being compensated in some way or other. It is also reported that there are gaps in the APC support structure depending on research disciplines or countries of researchers.

APC Comparison

The APC is an abbreviation for the Article Processing Charge, which may sometimes be referred to as Article Processing Fees. This has existed all along, but the charge we discuss here is the publishing cost an author pays when he/she submits an article to an open access journal and the journal decides to publish his/her article.

For comparison of amounts of APCs, a survey using 2010 data was conducted with respect to journals covered by DOAJ, the Directory of Open Access Journals (Figure 1). Though amounts for APCs widely range, the average is reported to be \$906 calculated over journals. Such attributes as the size of publishers, country, type and research discipline are also related to APC amounts, with commercial publishers requiring higher APC amounts than academic societies and university publishing houses. This survey covers fully open access journals published by publishers of a great variety of types.

Meanwhile, a comparison of the APC set by leading major publishers (Figure 2) shows that those journals that receive a large number of articles submitted and have extremely high publication processing costs also establish APCs at high levels. Additionally, it also shows that even within the same publishers, the APC of hybrid-type open access journals, which are basically subscription

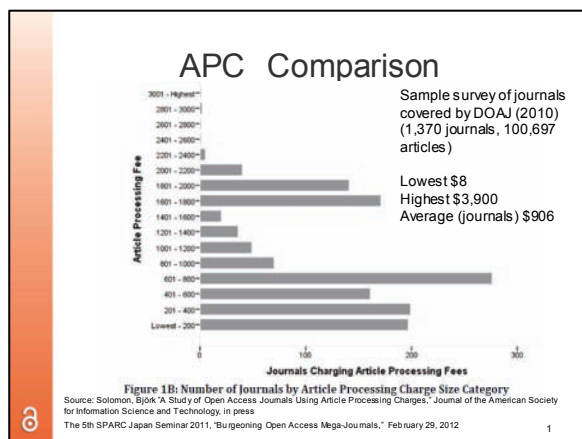
journals but provide an optional open access for each article, has a tendency to be set at levels higher than that of fully open access journals.

Then, how are APCs calculated? Conceptually, publication processing costs are calculated on the basis of the number of articles submitted to, and the number of articles published by, a given publisher. Though calculation methods vary among publishers, examples of the calculation of each specific item of production costs are presented (Figure 3-4). However, I would like to remind you that there are also other costs such as personnel costs that cannot be computed for each article.

As publications of articles by APC payments are expected to keep increasing going forward, universities and research institutions, which are called upon to use limited resources to meet payments of conventional subscription fees and at the same time support APC payments, may find it difficult to continue to provide necessary funds unless journal subscriptions are canceled in parallel. Also, an increase in small-lot transactions for each single article would mean an increased burden from the standpoint of publishers, some publishers want universities and other institutions to bring in articles by authors under their aegis in a package.

Open Access Mega Journal

With the continuing increase in open access journals, mega journals with characteristics completely different from those of conventional journals are emerging. They are called open access mega journals, the theme of this seminar. Open access mega journals publish an extremely large number of articles and accept articles from a wide range of research disciplines, unlike conventional journals specializing in segmentalized disciplines of research. While the peer-review process for conventional journals involves the importance and impact



(Figure 1)

Publisher *Hybrid OA	APC	Publisher *Hybrid OA	APC
BMC	Standard \$1,940	PLoS	\$1,350-2,900
APS *	\$1,700-2,700	Royal Society EXIS Open Choice *	\$2,380
APS "Physical Review X"	\$1,500	Royal Society "Open Biology"	\$1,932
BMJ Unlocked *	\$2,220-3,145	SAGE Choice *	\$3,000
BMJ "BMJ Open"	\$1,900	"SAGE Open"	\$695
Elsevier *	\$3,000-5,000	Springer Open Choice *	\$3,000
Hindawi	\$400-1,500	SpringerOpen	\$665-\$1,996
NPG *	\$2,500-3,900	Taylor & Francis Open Select	\$3,250
Nature "Nature Communications" *	\$5,000	Taylor & Francis Open	To be determined
Nature "Scientific Reports"	\$1,350	Wiley-Blackwell OnlineOpen *	Standard \$3,000
Oxford Open *	Standard \$3,000	Wiley Open Access	\$1,850-3,000

(Figure 2)

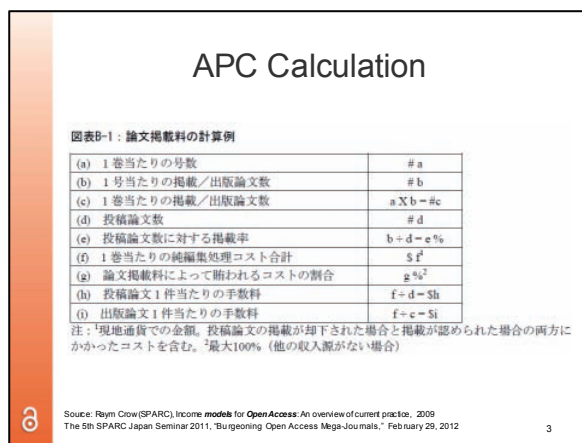
of articles as the criteria for judgment on publications and requires a considerable amount of time before publication due to multiple exchanges with authors and other factors, open access mega journals, in most cases, only involve light peer-review for publication. In other words, open access mega journals adopt the stance that articles that are scientifically accurate are worth publishing. One of their characteristics is to allow the prompt and efficient publication of articles through the on-line peer-review system with the simplified judgment process. Various publishers are publishing open access mega journals one after another (Figure 5).

Cascade Peer-Review

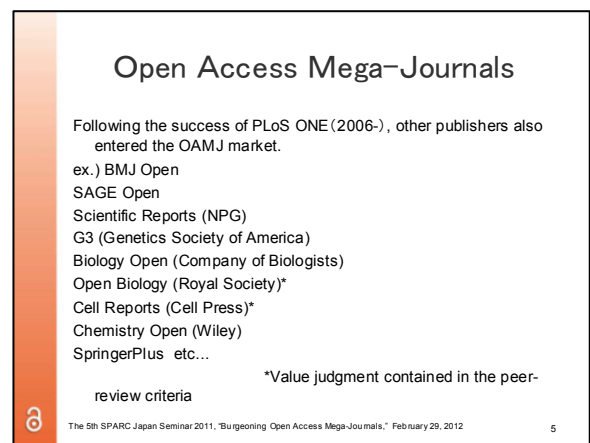
One of things that support the business model of open access mega journals is the phased peer-review, called the cascade (or cascading) peer-review (Figure 6). The Nature Publishing Group allows an article rejected by one journal to be submitted to another journal of the same publisher, and in this transfer, it also allows the second journal to take over a peer-review report of the first

journal. This procedure permits an economical and efficient cycle of article submission and peer-review without having to go through the whole peer-review process anew from scratch, saving much time for both authors and peer-reviewers (Figure 7).

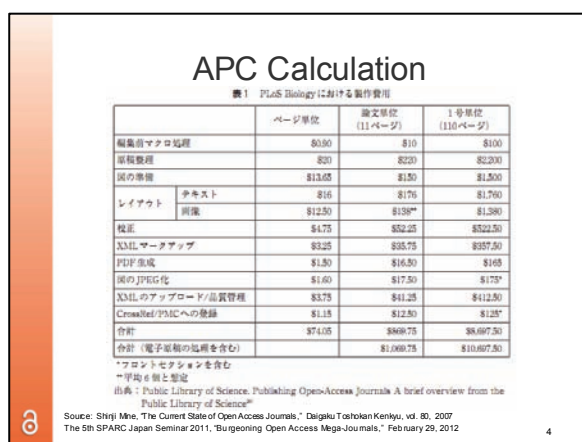
In the BMC Series, it is recommended that articles not adopted for publication by journals with the high rejection rate be published in somewhat lower-grade journals as long as such articles are judged to be scientifically reliable and worth publishing (Figure 8). As rejected articles also require peer-review costs, top journals with the receipt of many submissions and the high rejection rate have high costs accordingly. By having receptacle journals for rejected articles, however, a publisher can collect articles of certain quality for receptacle journals efficiently and at low cost while maintaining the quality of top journals, putting in place a mechanism that makes the publisher as a whole profitable. As there are actually some cases where authors are advised to publish their articles in higher-graded journals, this is not necessarily the



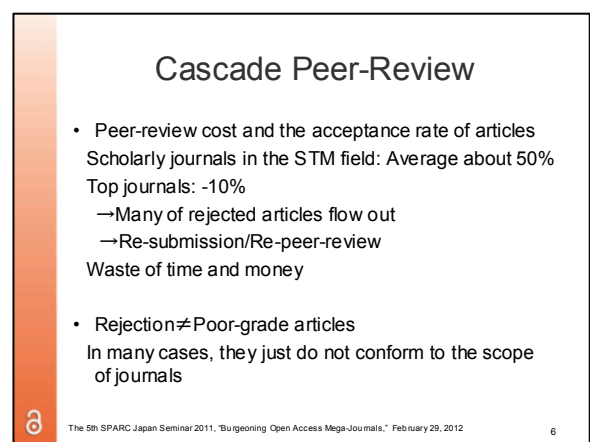
(Figure 3)



(Figure 5)



(Figure 4)



(Figure 6)

receptacle mechanism only for articles given low grades. But we can assume that it is mainly the mechanism for top-to-down flows.

Comparison of the acceptance rate of journals of the same publisher demonstrates the obvious gaps among them (Figure 9). Let me add that the cascade peer-review is being undertaken between multiple publishers (Figure 10).

Coexistence of Business Models

How are the business models of open access journals and mega journals going to affect conventional scholarly journals? Are all of existing journals going to convert them into open access journals? I do not think that will be the case. Nature Publishing Group, for example, says that it is going to allow the coexistence of different business models that correspond to different conditions and that no single business model would conform to all different conditions (Figure 11). More specifically, the Group points out that the conventional subscription fee model where costs are spread over a large number of readers is more desirable for top journals

with large circulations and higher costs per article, such as Nature, while the open access model that requires authors to bear affordable publishing costs is more suitable for journals that have much smaller subscriptions but lower costs.

Major publishers are entering the open access market one after another. Instead of converting existing journals into fully open access journals, however, they tend to launch new fully open access journals while introducing hybrid-type open access for existing journals (Figure 12). From the standpoint of researchers, the publication of open access journals by familiar publishers is expected to lower the barriers further and lead to the growing number of cases where articles that fail to find their way into publication by top journals are published in the receptacle mega journals. Publishers are also expected to be drawn into competition to attract researchers to their respective open access journals.

The Future of Open Access Publishing

There are several issues for discussion regarding

Cascade Peer-Review

ex.) Nature Publishing Group Article transfer service
(<http://www.natureasia.com/japan/srep/faq/about.php>)

NPGのほかのジャーナルで受理されなかった論文をScientific Reportsで出版できますか？

はい、できます。Scientific Reportsの編集体制はほかのジャーナルから独立しているの
で、NPGのほかのジャーナルで不受理となった論文原稿が投稿されれば、Scientific
Reportsでの掲載の可否を検討します。このような場合、論文原稿の著者は、ほかのジャー
ナルで不受理となった論文原稿をそのままScientific Reportsに転送する方法と、新規
にScientific Reportsに投稿し直す方法のいずれかを選択できます。転送する場合は、ほか
のジャーナルで不受理になった際の、レフェリー(匿名)からの直読報告書も添付されること
になります。(著者は直読報告書に目を通して判断することができます。)新規に投稿する場
合は、ほかのジャーナルでの直読過程は考慮されずに、新たに審査されます。

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(Figure 7)

Cascade Peer-Review

ex.) BMJ(British Medical Journal)
The acceptance rate by journal

BMJ (top journals): -7%
Other journals: -10%
BMJ Open (OAMJ): 55-60%

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(Figure 9)

Cascade Peer-Review

ex.) The BMC Series from BioMed Central

Journal peer review cascade

BMC Biology (High rejection rate)
BMC Bioinformatics (Moderate rejection rate)
BMC Evolutionary Biology (Moderate rejection rate)
BMC Genomics (Moderate rejection rate)
BMC Research Notes (Low rejection rate)

<http://riv.erv-valley.tv/media/conferences/coasp-2011/0204-Matt-Cockerill/>

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(Figure 8)

Cascade Peer-Review

The Neuroscience Peer Review Consortium (NPRC)
Peer-review consortium for journals in the neuroscience field
Reuse peer-review results of articles rejected by journals of other publishers

Publisher	No. of journals
ELSEVIER	6
ELSEVIER (ACADEMIC PRESS)	6
WILEY-BLACKWELL	6
INFORMA	3
PERGAMON - ELSEVIER	3
SPRINGER	3
BIO MED CENTRAL	2
IOS PRESS	2
AMER PHYSIOLOGICAL SOC	1
AMER PSYCHOLOGICAL ASSOC	1
COLD SPRING HARBOR LAB PRESS	1
ELSEVIER	1
HUMAN PRESS	1
IONOMIC ONLINE PRESS	1
KARGER	1
LIPPINCOTT	1
NATURE PUBLISHING GROUP	1
PORTLAND PRESS	1
SOC NEUROSCIENCE	1

Total of 40 journals. **Fully open access journals

IF(2010)	Value
Highest	14.191
Lowest	0.818
Median	3.833

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ocjournal

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(Figure 10)

the future of open access publishing. The first of them is what the primary area of interest of researchers is. One survey found that researchers, in deciding which journals they should submit their articles to, give importance to such factors as the fit of their articles within the scope of journals, the quality of journals and the speed with which journals review and publish their articles. Researchers are reported to display the particularly strong interest in the quality of journals.

Then, the reputation of journals comes to an issue. Previously, the impact factor was often used as an indicator. Open access journals and mega journals recently launched by major publishers one after another may get the impact factor two to three years down the road. But the impact factor is just an indicator to measure the degree of impact in a particular discipline of research, and as such, is not of much significance for mega journals that cover a broad range of research disciplines. Yet, it is true that the impact factor still enjoys the solid base of confidence. For example, it is used as an indicator to evaluate research results by universities and other institutions, and some funding agencies specify certain values for the impact of journals to which articles with their APC funding support are submitted. Furthermore, as for open access journals provided with the impact factor, there is a clearly perceived tendency that the higher the value of the impact factor, the higher the APC is. Thus, we may be able to contend that there is a certain degree of relationship between APC levels and the quality and rating of open access journals.

In order to maintain good quality in scholarly communication, we cannot ignore the issue of who should bear costs. However, the method of evaluating articles itself is undergoing change and greater importance is beginning to be given to the valuation of articles themselves rather than jour-

nals that publish them. There are also changes occurring in the timing of evaluation of articles, in the form of post-publication evaluation, in where articles are evaluated, in the form of evaluation via social media, and in who evaluate articles, in the form of evaluation by anyone instead of a limited number of peer-reviewers. Universities and other institutions in a position to evaluate researchers should take notice of these changes in the world of scholarly communication.

Lastly, we have to address the issue of sustainability. There is a report that hybrid-type open access journals have yet to become significantly widespread, accounting for only about 2% of all published articles. This is presumably because APCs still stands high at around \$3,000 and the APC for hybrid-type journals is something like an option fee for open access and does not guarantee the publication of articles and as such does not provide much of an incentive for researchers. Furthermore, some argue that the APC for hybrid-type open access journals is tantamount to double dipping and the preponderant view is that it is unlikely to hold good as the business model in the long run.

On the other hand, the key to the popularization of the author pay model is where authors can bear the APC burden. When publishing costs increase with rises in the numbers of open access journals and articles submitted to them, we are faced with the question of who will bear the increased costs and how. There are also concerns that when all journals turn to the open access model, the shouldering of costs may be concentrated on a small number of institutions with a large number of articles published or institutions with poor funding resources may find it difficult to respond to such a situation. With the rise of open access journals, we need to deepen discussions on these issues.

Coexistence of Multiple Business Models

ex.) *Nature* (<http://www.natureasia.com/japan/rep/faq/about.php>)

既存のネイチャージャーナル(Nature-branded journals)の中で、*Scientific Reports*のように全論文をオープンアクセスにする予定はあるか？

いいえ。既存のネイチャージャーナルを完全にオープンアクセスのジャーナルに移行する予定はありません。ほかのジャーナルでは、セルフアーカイビングがもう1つの解決法となっており、NPGには、進歩的なセルフアーカイビングに関する方針があります。NPGは、数々のサービスと方針を通じて、著者の皆様が全世界の資金提供団体の一般アクセスに関する要件を確実にお充足できるようにしています。詳しい情報は、<http://www.sherpa.ac.uk/romeo/>をご覧ください。

NPGでは、著者の皆様が、自らの論文をオープンアクセスとする選択肢(セルフアーカイビング)やAPCが発生するオープンアクセス)をできるかぎり用意することが正しい選択だと考えます。*Nature Communications*と数点のNPG刊行のアカデミックジャーナルと学会機関誌では、APCの実払いを必要とするオープンアクセスを確保します。

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(Figure 11)

Major Publishers' Responses to OA Journals

Publisher (No. of publications*)	Subscription journals	Subscription journals (Hybrid OA)	Fully OA Journals	OA Mega J
NPG (102)	<i>Nature</i> , etc.	<i>Nature Communication</i> , etc.	<i>Molecular Systems Biology</i> , etc.	<i>Scientific Reports</i>
Elsevier (over 2000)	Hybrid OA-responsive: <i>Cell</i> (Cell Press), etc.			<i>Cell Reports</i> (Cell Press)
Wiley (over 1000)	Hybrid OA-responsive: <i>OnlineOpen</i>		<i>Brain and Behavior</i> , etc.	<i>ChemistryOpen</i>
SAGE (over 600)	Hybrid OA-responsive: <i>SAGE Choice</i>			<i>SAGE Open</i>
BMJ (39)		Various journals [BMJ Unlocked]		<i>BMJ Open</i>
APS (19)		<i>Physical Review Letters</i> , etc.	<i>Physical Review Special Topics</i> , etc.	<i>Physical Review X</i>
Springer (over 2000)		SpringerLink Journals	SpringerOpen Journals	<i>SpringerPlus</i>
PLoS (7)			<i>PLoS Biology</i> , etc.	<i>PLoS ONE</i>

* By SHERPA/ROME O (As of February 2012)

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(Figure 12)