



Would not bigger be better?

**Some reflections on aspects of the
business models of
Open Access publishing**

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Preface

This master's thesis is the result of many years of interest in electronic publishing and Open Access, even from before that term was coined.

It started in the mid-nineties, when I was asked to write a report for the board of the University of Tromsø (I was at that time working in the finance department of the university administration) on the publishing activities of the university, and the possibilities of establishing an on-campus printing operation. My conclusion was that the university should go for electronic publishing on the internet. This was, at the time, a very radical suggestion, so the report was shelved, never to be seen again.

My studying documentation science is a result of what I learned about scientific publishing through the writing of the report – and through the fate of the report – and a wish to explore the subject further. I continued my administrative career until 2006, when the university library had an opening in the field of Open Access – a position that my studies and my interest had qualified me for.

In this position as an “Open Access advocate”, both locally and on a national level, I have participated in a number of Open Access projects. This thesis springs out of my work for the Nordbib¹ project “Aiding Scientific Journals towards Open Access” (shortened NOAP for “Nordic Open Access Publishing”), where I – with my background in economics and finance – worked on business models for Open Access.

I found it natural to write up some findings of my work in NOAP in the form of articles, in order to reach an interested audience. While the project is formally closed, I

¹ Nordbib is a funding programme for research and development in the area of Open Access to scholarly and scientific information at a Nordic level. Nordbib itself is funded by Nordforsk, which is funded by the Nordic Council of Ministers.

have continued working on data and ideas created during the project, and will continue to publish them.

This thesis is modelled on modern doctoral theses, and consists of an introductory summary based on two articles and an article manuscript, followed by the two articles published in *First Monday* in 2010, and a manuscript intended for publication in *First Monday* or another similar journal.

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I also would like to thank my colleagues at the University of Tromsø, and my OA co-workers both on the national and international level, for many interesting discussions that have helped me develop my thinking, and inspired me to publish these articles.

A word of thanks goes to my supervisor, Andreas Vårheim, and his colleagues, who over the years have taught me Documentation Science and who been active, critical and supportive discussion partners both in my work and in the process of writing this thesis.

And a final thanks to my institute, who gave me the final impetus to get my thesis done by informing me that as of May 16th 2011 I would be struck of the student register if I had not delivered it by then. Strong motivation is sometimes needed!

Tromsø, May 15th 2011.

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The problem

There are a number of problems about Open Access that could have deserved being discussed. Here, I want to look into the consequences of how Open Access publishing as an industry is organized.

By Open Access (OA) publishing I mean publishing that lets anyone access what is published, and also gives everyone a licence to – to some extent – re-use or re-distribute what is published, for free. There are a number of licenses and conditions that will allow such re-use and re-distribution that it could be called Open Access.

The Berlin declaration (*The Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities* 2003) is a statement on how science should use the Internet to create a global, common knowledge base. The declaration defines Open Access, and it is often used as a standard for what conditions must be satisfied in order for a journal or other contribution to be called proper Open Access. The conditions set out in the declaration is quite "radical" and much that is called OA does not conform to this declaration – though much does satisfy it, or is even more radical. Another declaration that defines OA is the The Budapest Open Access Initiative (*The Budapest Open Access Initiative* 2002).

It follows from basic economic theory that such publishing has to be electronic as traditional paper-based publishing has a distribution cost that does not allow access to be free, at least not to any important extent.

The overall research question has been: Is Open Access publishing organized in an efficient way? In the papers that constitute this thesis, I try to look at some aspects of how OA publishing as it is organized today, works, whether this seems to be efficient, and whether OA is going in the right direction. I have looked at whether, and how, advertising is used to finance OA journals, and how the OA publishing industry is organized when it comes to publisher

size. The information collected through my enquiries has led to a question of whether institution based Open Access publishing is organized so that it is a) economically efficient and b) competent in the technical fields of publishing. It is, of course, not possible to answer the overall question, only to give some partial answers. A by-product of these enquiries is the realization that these questions are just as relevant for institution-based traditional publishing.

Open Access and remediation

Open Access is not, in itself, about remediation. Remediation is a term describing how new media both refashions and pays homage to older media, representing the older media in the new (Bolter and Grusin 1999 45). A new medium is often a new technology for disseminating content created for an older medium, as e.g. the movie started out as filmed theatre.

But OA is a consequence of remediation. During the 1990's and later, scientific publishing has been transformed from a very paper-based industry with electronic add-ons, to an industry basically storing and distributing their output electronically, with paper products as an extra service for customers willing to pay extra. This is a development that has been made possible with the emergence of the Internet. Before the Internet, electronic solutions were vendor-specific, cumbersome and costly; the Internet has made electronic solutions generic and easily accessible – for those who can afford them.

The electronic article is a remediation of the paper article, and the electronic journal a remediation of the paper journal. This remediated article and journal makes a number of changes in form and function possible. OA is not about that. OA is about the new economic and ownership models that the combination of the electronic article and journal, and the Internet, makes possible.

Toll Access versus Open Access

Traditional publishing, in this context often called Toll Access publishing (TA), needs to generate income from readers. This is reasonable, as there are significant marginal costs associated with distribution to extra readers – cost of printing and cost of sending paper in the post being the major ones. In a paper-based world, recouping the costs from the readers is the only viable financing model for journal publishing. This, however, works contrary to authors' interests as it makes readership smaller than it would be if access was free.

Open Access means that readers can access content for free (the term also implies some further rights for readers). As this does not create a situation where publishing is cost-free, it creates a situation where funding has to come from other sources than from readers. This can be authors' fees (a common model for commercial publishers), institutional support from a scientific organization like a university, society or other (a common model for smaller, non-commercial journals) or income from third parties (e.g. advertising) or supplemental products (e.g. reprints) generated through the OA publishing activities.

OA meets authors' needs better than TA, as it does not need to restrict readership in order to work. This is also more in line with a view that knowledge (also as represented by journals and articles) is a "common" or "public" good. This is an economist's term for a good that can be used by a large or unlimited number of consumers at a time, without (seriously) depleting the stock of the good; and where the consumption by one person does not impede the consumption of the same good by another person (Nicholson 2004 544-548). Public roads, nature, fresh air are (in varying degrees) examples of such public goods. Knowledge is a perfect public good, as my use of knowledge does not happen to the detriment of some other user of the same knowledge, and use does not deplete any stock. Possibly, my use of it could be to the advantage of all other users of the same knowledge – this is, after all, the thinking behind

science itself where the sharing and common reuse of knowledge is what makes science work, and expands the pool of knowledge.

That OA is good for society both in terms of economics – see e.g. the “Houghton report” (Houghton et al. 2009) – and in terms of enlightening the public debate, cf. (Habermas 1989), also makes OA important.

Open Access and Documentation Science

Documentation Science, as it is taught and studied at the University of Tromsø, is a very “wide” and “open” discourse about documents in a broad sense. A basis for this study is the models for documentary analysis set forth by Niels Windfeld Lund (Lund 1999, 2010).

In his models, he describes documents as objects carrying information, and being situated in a matrix of traditions and analytical viewpoints.

Among the elements in his model for analysis are the producing institutions, the techniques used, conventions involved and the physical document itself. This model, that allows so many influences on the document, also opens itself up to questions about what happens when there is profound change in the factors surrounding the document.

Lund’s model also readily opens up documentation science to the use of a number of other perspectives in the analysis – political science, sociology and economics just to name a few.

The TA journal is itself a product of technical and societal changes over a long time span – paper production, printing, functioning postal systems, scientific organisation being but the major ones. Since the first journals, the basic principle of the journal has undergone but few major changes, even if the content and its look and feel has changed over the centuries. The major change, corresponding to a similar change in science, is the size of the scientific publishing industry as measured by the number of articles and journals.

Now, the article and the journal have been remediated from paper to electronic editions, and changed its distribution from postal services to electronic distribution. This is done over the Internet, a technology that is available to the majority of the world’s literate population and a vast majority of the world’s scientists. This technology has created profound change in a number of industries; my old industry – retail banking – is one that has undergone a total reworking of how it operates during the last 15 years, primarily as a result of the Internet.

When there has been such profound changes both in the technology of the article and the distribution system, should one not also expect other changes that exploits the possibilities these changes make available?

In my opinion, OA is one natural way of exploiting the effects of remediation and the new distribution system. There are, of course, other ways to exploit it. One could e.g. do a lot about both the article format and the journal format when publishing electronically only – such changes are coming, but so far only slowly and sporadically. This seems to be the “norm” for remediation – the first use of the new medium is mimicking the old medium, only later will the possibilities inherent in the new medium be exploited (Bolter and Grusin 1999 44 ff). And often the old medium is not totally replaced, but lives on to the extent that is useful to the consumers. Even if one hopes for a conversion to OA, one should expect some TA to live on and flourish for an indefinite time.

Another perspective that lies inherent in Lund’s model is that there must be room for processes that can change the document, both by the “laws of historical processes”, i.e. change that comes as a result of a large number of micro-level decisions that are not targeted at creating change; by external changes – small or large - not intended to create change in the document (e.g. the advent of the internet); and by activities targeted at creating change, or at least creating processes that could lead to change. This should mean that we in the context of documentation science could discuss whether change could be beneficial, and how beneficial change could be created. My job for the last 4.5 years has (in part) been to create change in the way we disseminate scientific content. My studies presented here, are some attempts to create new knowledge in order to better inform the debate over Open Access versus Toll Access and to point at possibilities of change in how OA journals operate – possibly also inspiring some decision maker to make new decisions, targeted at creating viable OA.

The articles

A common underlying assumption for the articles is that even if the principle of OA is beneficial for science, there are other considerations to be taken into account. The articles are written with a heavy slant towards economics as a tool for understanding the workings of OA, and also how OA could be beneficial. An important aspect is the efficiency of OA publishing. Efficiency in this context (as an economic term) is the relation between resources spent and the amount of goods and services provided to society – see, e.g. (Maddala and Miller 1989 247-249). OA publishing is inefficient if more services (articles) of the same or better quality could be provided with less use of resources. Using more resources than necessary (e.g. by using them inefficiently) on disseminating scientific content, will divert funds from other research activities.

OA journals, in my opinion, to be beneficial to science, have to be produced as efficiently as possible, exploiting all possible external sources of income and all means of increasing distribution while – of course – maintaining quality.

My assumption is that we are not producing OA articles and journals according to these principles at the moment. My articles seek to establish some facts that could shed light on this.

“The role of advertising in financing open access journals”

(Frantsvåg 2010a)

The financing of OA journals is a problem for the “OA movement”. The commercial publishers use article processing charges (APC) but this works mainly in the realm of medicine and natural sciences; in the humanities these practices (and commercial publishers) are virtually

unknown. In an unpublished study, presented at an OA conference in Uppsala (Frantsvåg 2009), I found that Nordic OA journals were almost totally dependent on support from the hosting institution or a third party. Numbers (although with huge possibilities of errors) also indicated that OA journals could be very costly to operate.

Some articles and other writings (Björk and Hedlund 2009 ; Crow 2009 ; Hedlund, Gustafsson, and Björk 2004 ; Solomon 2008) pointed to advertising as a possible way to (part) finance OA journals. Clearly (as readily observed from their journal sites on the web), many commercial publishers used advertising to supplement their income from APC and other sources. I could, however, find very few facts about how advertising actually was used to generate income. In the literature mentioned above, there were mostly general statements about advertising as a possibility, little about how this could be done – except for in (Solomon 2008) where some of the practicalities are discussed – and nothing about how and to which extent advertising actually was used to generate income.

The study was done by sending a questionnaire to about 1/3 of the total number of journals registered with the Directory of Open Access Journals (DOAJ) at that time, selected at random. The questionnaire asked whether advertising was used, if not, why, and if yes, how. Journals using one particular form of advertising were asked for some details of their income – none answered this particular part of the questionnaire.

The tentative conclusion from the study is that while large, commercial publishers use advertising to supplement their income from other sources; small institution-based publishers do not use advertising to any extent even if one should expect them to need this income more than do the larger publishers. I also found that smaller publishers tend to use forms of advertising that needs more competence and labour to use, than larger publishers who often exploit simpler ways of using advertising. The forms favoured by the smaller publishers also were the

forms that most easily could lead to problems with editorial integrity — or to suspicions concerning this integrity.

The study also revealed – not surprisingly – that there is considerable ideological resistance to the use of advertising. (Given the size of the commercial publishers I would tend to see this as a lost cause – I believe the majority of scientific articles is published with advertising surrounding them.) Some of the resistance was expressed in wordings like “scientific journals shouldn’t use advertising”. This is an ideological statement, and says nothing about why this should be so; the statement contains no reasoning.

Surprisingly, a large number of journals answered that the question of advertising had not been considered by them – until they now were questioned about it, and discovered that this could be relevant to them.

An overall conclusion is that, in general, smaller publishers are less competent and less efficient when it comes to using advertising in order to create financing for their journals.

“The size distribution of open access publishers: A problem for open access?”

(Frantsvåg 2010b)

While writing (Frantsvåg 2010a) I had to look at the size distribution of the publisher just in case there could be differences according to size. The size distribution was so skewed that I decided to look further into it at a later stage.

This article is only about the size distribution. Size matters, according to basic economic theory. You need a certain (not defined) size to be able to produce efficiently and in order that your average fixed costs are kept low. There are two major economic effects of size in this context:

1. The effect of size on average fixed cost. Fixed costs are costs that are the same, irrespective of the size of your production. In a typical small-size OA journal, the editor has to invest (much) time in learning the “tricks of the trade” like operating some publishing software, creating an article layout, licenses, efficient distribution etc. The cost of establishing this competence – man-hours used multiplied by an hourly cost – divided by the number of articles the journal will publish while this editor edits it, is an important part of the article’s fixed cost. And the more articles produced, the lower the average fixed cost per article. This also holds for other fixed costs, e.g. annual payments to a service provider that hosts the software. One of the things revealed through my research is that much point to the average fixed cost being held artificially low by many smaller OA journals through not investing time (hence, costs) in gaining the competence needed, with a corresponding lack of technical quality and width of dissemination.
2. Economies of scale. This is a term for the effect size has on the efficiency of the production; in this case the technical and editorial “production” of the article from the first manuscript comes in until it has been published. There are a number of processes involved that needs skill and training, where the productivity of the persons involved will increase with an increased number of articles. A larger number of articles will have to involve a larger number of persons, both meaning one can recruit new people with different skills needed, and creating possibilities for a fruitful division of tasks, that could lead to increased competence and productivity. This increased productivity will not go on forever, but it is one of the driving forces behind e.g. the industrial revolution, with its change from artisanal production with few persons doing every step of the production process, to factories with many persons each performing a small part of the production process.

These two economic aspects are treated in basic textbooks in economics, as e.g. my old undergraduate textbook in microeconomic theory (Ferguson and Gould 1975 208-209) or more

modern works as (Samuelson and Nordhaus 1989 472, 498-531; Sloman and Sutcliffe 1991 140-178). There is also a limit to how far size could be extended without economies of scale be turned into diseconomies of scale (Ferguson and Gould 1975 209-211). Given the size of the smaller publishers I have no fear we need to be concerned about the possibilities of diseconomies of scale, this could be more of a problem for the larger TA publishers.

The study reveals (as other similar studies have done, see e.g. (Polydoratou et al. 2010 ; Polydoratou and Schimmer 2010)) that the size distribution is extremely skewed with single journal publishers being about 90 per cent of all publishers, publishing a majority of all journals. As I have no data about articles per journal, it is difficult to say if this also holds on the article level – large publishers probably also have journals that, on the average, contain more articles per year than do smaller publishers. The article also discusses possible problems with the available data, a discussion lacking in other articles using the same material and the same method for finding publisher size.

A first conclusion in the article is that OA looks extremely inefficient. However, for various reasons I also look at similar numbers for TA and – surprisingly – the numbers and the size distribution looks remarkably similar. TA is also characterized by single journal publishers; even if the average number of journals per publisher is larger the difference is not remarkable.

A superficial look at the raw data, both OA and TA, indicates that we have two different kinds of publishers: The commercial ones, which are large, and the institutional ones, that are small. (See also (Polydoratou et al. 2010 ; Polydoratou and Schimmer 2010)) Other factors indicate that larger publishers are better at disseminating content. So we end up with large commercial publishers, exploiting income potential and producing and disseminating efficiently, and small institutional publishers, ignoring income potential and producing and dis-

seminating inefficiently. The final conclusion is that institutions need to look at how they organize their publishing activities.

“The size distribution of Open Access publishers – is it going in the right direction?”

This is a manuscript intended for publication at a later date.

This study looks at how the size distribution of OA publishers has changed over time, from May 2009 to December 2010. The idea is that the situation as described in “The size distribution of open access publishers: A problem for open access?” is not very different from what was found in TA publishing. If the numbers show that size is increasing and that OA gradually is growing closer to TA, this indicates that things are developing in the right direction.

The study reveals that change is going in the right direction, but at an unimpressive rate – at the rate found, it will take about 32 years for OA publishing to reach the average publisher size found for TA in (Frantsvåg 2010b).

A question intended to be looked into, that lack of data has prevented me from studying (see page 47), is how TA publishing has evolved with regards to average publisher size over (roughly) the same time period. There is no reason to believe that the average size of TA publishers has been constant in this period, it could be increasing more than for OA publishers. OA needs to increase its average publisher size significantly more than TA does, in order to become competitive in an economic sense.

The study also tries to establish some facts about how the growth in OA is coming about – is it a steady influx of single journal publishers with only a few publishers growing, or is there growth also among a larger number of smaller publishers?

The numbers clearly shows both a steady influx of new publishers, most of them publishing only a single journal, and growth in the size of existing publishers. Publishers that have grown

from one journal to two to five journals over the period studied, have contributed most to the growth among existing publishers, but new publishers have contributed most to the growth in the number of journals.

As there are few medium-sized and large publishers, it is difficult to get a very clear picture, but it seems safe to say that the single journal publishers have a smaller share of the market, and that publishers of two and three journals have a greater share of the market. Publishers publishing more than three journals also have increased their market share.

Some tentative conclusions

I have in my articles shown that there seems to be a divided OA industry; this is confirmed by findings in (Polydoratou et al. 2010 ; Polydoratou and Schimmer 2010). There is a commercial sector consisting of medium-sized and large publishers publishing a large number of journals, financing them by a combination of Article Processing Charges, advertising, sale of by-products and support from societies connected to specific journals. And there is a non-commercial sector based in research institutions and societies, publishing a single journal (or a small number of journals), financing them almost exclusively by institutional support.

Some of the smaller journals answered in my survey that they did not want any commercial income, as they wanted to be independent. Seen from a distance, this argument looks strange. Which is most independent: A journal receiving income from many different sources, or a journal being totally dependent on support from a single source?

Likewise, some journals did not want to have advertising income in order not to compromise their editorial integrity. Strangely, the survey seemed to indicate (the numbers are not large, so one should not draw strong conclusions) that smaller journals tended to prefer the forms of advertising that is most likely to lead to problems with editorial integrity, while the larger ones to a larger extent used forms of advertising where no such problems could arise as there is no communication between the journal and the advertisers, they do not know of each other. (E.g., Google AdSense, the most used form of advertising, is a system where the journal sets aside space on their website and leave it to Google to fill the space with advertising that Google find relevant through analysis of content. The journal does not know what they advertise and for whom, so no conflict of interest can arise.)

My conclusion is that institution-based OA (and even TA) is organized in a way that is economically inefficient; it also does not create enough publishing competence that the jour-

nals can do a good job with its distribution or financing. And as shown by some of the results, the level of reflection on these issues is not impressive.

How can such a situation arise? Drawing on experience from a career in a university finance department I would argue that one explanation is what I have called the “cost invisibility problem” in universities (and similar institutions). There is a tendency to equate costs with expenditures, overlooking the costs of resource use. E.g. the value of scientists’ time is often perceived to be 0, because the use of their time does not incur an invoice. In economic terms, this is wrong, but it results in activities only using internal resources being perceived as having no or little cost. Institution-based publishing is such an activity that often has no other cost than internal resource use, hence it is perceived as being cheap. And with no accounting for use of scientists’ hours, there is no cost in the internal accounts either. The activity becomes, in effect, invisible. Activities that are invisible are not discussed in terms of efficiency, but they cannot grow too much without becoming visible, and a problem. So this kind of activity is doomed to a small-scale life with the problems of lack of competence inherent in the situation.

And, of course, the vast majority of (small) journals are led by scientists, not by economists (unless economics happen to be their science.) Their focus is the quality of the content of the journal, and they generally have little or no training in the other aspects of the workings of a journal.

There is, in my opinion, a need to transform today’s large number of small publishers into a smaller number of larger publishers that more easily could become economically efficient institutions, ensuring both technical quality and competent dissemination of content. This is not to say that the bigger, the better – there is probably some optimum size for the economic efficiency. And if we want innovation and real remediation of the article and the journal, we probably have to look for some small (though not necessarily minuscule) journal or publisher.

Is there a solution?

There probably are many solutions that could help alleviate the present problems. A first one is pointing at the problem, making decision makers aware of it. My articles are meant as a step in this direction – no problem that one is unaware of, will be solved except by accident.

Abolishing institution-based publishing could, of course, be one solution. Outsourcing publishing activities to professional publishers could (would, probably) be more cost-effective than small-scale in-house publishing. Many commercial publishers today publish journals that were started as in-house journals by some institution or society, so the thought is not new or unproven; it has been used for a long time in the traditional publishing world.

However, many present institution-based journals probably are institution-based just because they have a very small income potential and need institutional support to be published. Outsourcing could professionalize the income side of the journals' operations, but it will also make the support visible and in need of explicit financing. And professional publishers will expect higher standards of technical production than most institution-based journals have today, so the costs could increase.

One way of bettering the situation could be to buy some competence in the form of external services, while still publishing as an in-house journal.

An intermediate solution is to concentrate and professionalize in-house publishing activities. This is a strategy that the University of Tromsø Library has chosen by the establishing of Septentrio Academic Publishing, other Norwegian universities have established similar services. (Albeit not in response to my findings outlined here, my findings have more come as a result of ideas I have got while working on practical problems for our journals.) The idea is that by creating an institution-wide publishing service that can serve journals with software solutions, server hosting and competence in the use of software and dissemination tools we

can both relieve editors from some of the technical and administrative work and create better publishing competence, the cost of which can be shared over all journals – instead of such competence either lacking or having to be borne in full by each and every journal.

Such a service could of course also be extended to be a co-operative venture between a number of institutions, creating an even better environment for their journals. Increasing size should decrease cost per article and increase publishing competence across journals.

The small growth in publisher size shown in “The size distribution of Open Access publishers – is it going in the right direction?” indicates that change does not come by itself. Institutions hosting, owning or funding journals need to initiate change from the top.

Future research

My research has been carried out over a short period of time. My conclusion is that there is need for change, such change will take time. In order to see if there is change, the development over time – e.g. three to five years – needs to be monitored and analysed. This could be done by repeating the study reported in my article manuscript (Article 3 The size distribution of Open Access publishers – is it going in the right direction?) after some time. And, of course, the need for change shown through these studies need to be marketed.¹

I have concerned myself with publisher size as measured by number of journals in the last two articles. An equally, of not to say more, meaningful measure is publisher size as measured by the (average annual) number of articles published. The work where we could expect economies of scale is mostly connected to articles, more than to journals even if journals in themselves also incur activities where such effects could be expected. Analyses of the size

¹ I will be giving a presentation based on these findings on the PKP conference in Berlin in September 2011, and some of this will also be presented during a workshop on OA journal publishing at OAI7 in Geneva in June 2011.

distribution of OA and TA publishers measured in the number of articles could give valuable insights that could point to areas that need improvement.

Yet another aspect that could be of interest in this context is to look at the citation rates of journals published by smaller versus larger publishers, both as measured by the number of journals published and by the number of articles published. Citations rates – used with caution – could be a measure of the dissemination efficiency of journals and of their scientific value.

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Article 1 The role of advertising in financing open access journals

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PEER-REVIEWED JOURNAL ON THE INTERNET

The role of advertising in financing
open access journals

by Jan Erik Frantsovåg

Abstract

In a number of articles or books, advertising is pointed to as a possible way of financing open access (OA) journals. Very little work seems to have been done on finding out how advertising actually functions as a source of financing for OA journals. A survey was carried out to explore the field, both why journals did not employ advertising, and how advertising was employed. The findings show little uptake of advertising among OA journals, and indicate that there is a lack of understanding of how advertising could best be employed.

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Introduction

In his book on how to establish and operate open access journals, David Solomon wrote [1] that "A [...] way to generate income from the operation of an OA journal is through advertising on the journal's Web site." Solomon dedicated several pages to discussing the possibilities of generating advertising income. In other sources, advertising is mentioned as a possible source of income, but only in passing. It is difficult to find any real treatment of the subject — see, for example, Björk and Hedlund (2009) and Hedlund, *et al.* (2004). Crow [2] examined the subject in detail, but except for examples of journals using different kinds of advertising, there was little about what OA journals actually do. I have not been able to find any survey or analysis of what advertising actually means for OA journals.

Advertising revenue is important to many media, not the least online newspapers. Contrary to some scholarly journals, newspapers depend on generating advertising revenue in order to finance their operations. Very few newspapers have tried to generate income directly and solely from readers, and — to my knowledge — none from their authors. To some extent, newspapers have tried to generate revenue from their back files, by making access to older information —that is, their archives — a paid service. Libraries often subscribe to these kind of services. For many online newspapers, the online news service is an offspring of a traditional newspaper, financed by subscriptions, sales and advertising revenues.

For traditional scholarly journals, advertising has been a non-existent or negligible source of income. The readership is too small to be interesting to advertisers or the journal itself is

published too irregularly to be suitable for advertising. For some journals, the readership will often not constitute a meaningful target group for an advertiser. The exceptions to this are large, frequently published journals with strong connections to professional societies or associations, like medical journals. For such journals, advertising has been and will be an important source of income [3].

A transition to OA publishing, with an Internet presence as the means of distribution, creates new possibilities for scholarly journals relative to advertising income. OA journals constantly create new scholarly content to attract very specific readers, but this content is not tailored to create advertising income. Hence, all OA journals have some kind of readership of some size and composition, dependent on the latest developments in research in a given discipline. OA journals have an additional advantage in that archival content is valuable and attracts readers. Therefore, this longer "lifespan" for a given archival article in an OA journal — compared to one in an Internet newspaper — will offset the significantly smaller (but focused) circulation of an OA journal. This archival content will also compensate for the less frequent publishing schedule of an OA journal compared to a daily or weekly newspaper.



Forms of advertising

There are a number of mechanisms for generating advertising revenue for an OA journal. Some of these mechanisms resemble those available to traditional journals, like directly negotiated product advertisements. These "traditional" advertising forms need administrative resources to negotiate content, location and pricing, as well as statistical services on views or clicks and invoicing. This kind of "negotiated" advertising could also lead to problems with editorial integrity — or to suspicions concerning this integrity [4].

Online advertising also comes in forms that are unknown in traditional publishing. "Affiliation" describes these new forms of advertising. This means that the publisher joins an affiliate network of some kind, either directly with some advertiser or through a third party. Typically, the publisher is paid not for time invested or the space used for advertising, but for the traffic brought to the advertiser — by the click, per registration or as a percentage of sales. There is no negotiation, the publisher either applies to become an affiliate or not, based on the advertisers' range of products or services and on the commission structure offered. Either the advertiser accepts the publisher, or rejects — generally, a rejection will be based on poor Web site quality or inappropriate content. The percentage of rejections is often very low. Editorial integrity is not threatened, as there is no communication about editorial content between the publisher and advertiser.

If an OA journal is in a field where books are important, affiliation with Amazon or a national Internet bookstore (depending on journal language and geographic distribution of readership) could be a way of generating income. The simple way of doing this is to place a clickable logo on the journal Web site. The more pages the logo is found on, the better the chances of generating income. A more labour-intensive way is to link to specific book titles — books reviewed, discussed in articles or cited in the journal. This may result in significantly more income, but obviously requires more resources.

A more general way of employing advertising is to affiliate with Google AdSense. This Google service places ads on your Web pages. Their choice of ads to place on your pages depends on an automated analysis of the textual content of pages. A given journal sets aside space on their pages, and leave it to Google to fill in the space with ads. The journal has no control over what advertising is shown on their pages. The ad content actually differs from viewer to viewer, based in part on what domain the viewer is coming from. There are some mechanisms for a journal to exclude advertising from specified sources. The journal also has very little control over revenue, but has to accept Google's numbers. Implementing Google AdSense is a one-time operation, so income generated this way requires little additional work for a given journal.



Survey background

While OA journals generally seem to have problems in finding stable and long-term financing, relatively few OA journals seem to employ advertising as a means of generating revenue.

It therefore seemed interesting to find out why so few OA journals seek advertising in any form. Based on conversations with scholarly editors, I expected to find a high degree of ideological resistance to the idea of advertising.

I was also interested in understanding how those OA journals that accepted advertising worked with advertisers. Did they affiliate — and if so, with whom — or did they negotiate directly with advertisers? The expectation was that journals, especially smaller journals, would prefer to affiliate, mainly with Google AdSense, as this would be a low-cost way of generating income, while larger journals would go for more labour-intensive ways of employing advertising. For those that employed Google AdSense I also asked for financial information to see if any background variable could be seen to have a clear influence on the income potential of a given journal.

For both sets of questions, I was also interested in any discernible pattern based on background variables like language, subject, journal size, etc.

The survey was constructed in three parts: one general part with general and background information on the responding journal and a question whether the journal accepted advertising or not. Those journals responding no to this question were presented with questions aimed at clarifying the reasoning behind their non-acceptance. The respondent could choose one or more reasons, or add other reasons or clarifying the answer with a comment field. Journals accepting advertising were asked how they selected advertising (direct negotiation, affiliation and — if affiliates — what kind of advertisers they affiliated with). Those using Google AdSense then were asked about click-through rates and income per thousand clicks.

At the end, all respondents were given the chance to comment on the survey and to add any information they felt relevant.



The survey

On 13 May 2009, I downloaded a file containing information on all 4,148 journals then in the Directory of Open Access Journals (DOAJ; <http://www.doaj.org/>).

Every journal was assigned a serial number, and a random selection of journals was taken by finding journals whose serial number was divisible by 10, then 9, 8 and 7, giving a sample of 1,719 journals. All Nordic and Baltic journals were included in the sample.

I then tried to assign an e-mail address to each journal, in order to mail this survey. A not insignificant number of journals hid their e-mail addresses; 387 journals were removed from the sample, primarily due to a lack of visible e-mail addresses. While journals with no visible e-mail addresses came from all over the world, problems with language (my language skills) probably led to a lower participation rate for journals using languages other than English, Scandinavian, German, Spanish or Portuguese. These issues did not apply to journals using Open Journals System (OJS; <http://pkp.sfu.ca/?q=ojs>) as e-mail addresses usually are found at a given location in the journal structure in these journals.

The remaining 1,332 journals were e-mailed the survey between 14 May to 6 October 2009. Some of these messages bounced and in other cases administrators of journals decided not to participate in the survey. In total, the survey was answered by representatives of 474 journals, a response rate of 35.6 percent. Of these, 377 gave full answers to the survey, giving

a response rate of 28.3 percent. These answers representing 377 journals were used for further analysis.

Publisher size

Statistics from the entire DOAJ file indicate that most journals are published by single-journal publishers — 2,430 of 4,148 journals, or 58.6 percent of all DOAJ journals. In fact, 97.9 percent of publishers listed in DOAJ create five or fewer journals, publishing a total of 72.8 percent of all DOAJ journals. How do we define a publisher? Is it the editorial team that is the publisher, or is it the technical organisation that operates the infrastructure? The large number of small publishers in DOAJ is probably a result of assuming that the editorial team is equivalent to the publisher, at least for those journals representing academic institutions. An assumption is that the larger the publisher, the more professional a publishing venture it is. It is also probable that professional publishers and less professional ones will have different policies and views on how publishing should be financed. It is therefore interesting to compare the respondents with the DOAJ population concerning publisher size. Twenty-two journals that responded could not be identified in the DOAJ population so they were removed.

Publisher size	1	2–5	6–10	11–15	16–20	21–50	51–100	161	188	
DOAJ percentage of journals (N=4,058)	58.6%	14.2%	6.4%	3.2%	1.4%	2.6%	5.3%	3.8%	4.5%	100.0%
Sample percentage of journals (N=355)	76.9%	13.0%	5.6%	1.7%	0.6%	0.3%	0.8%	0.0%	1.1%	100.0%

In Table 1 we note that single-journal publishers are over-represented, medium-sized (2–10 journals) are fairly represented while publishers with more than 10 journals are greatly underrepresented. The one publisher in the column “161” is the Hindawi Publishing Corporation (<http://www.hindawi.com/>). No Hindawi journal participated in this survey.

Journal language

Journals in the survey were published in 60 different countries. In addition there is a “International” category containing 12 journals that were unable to pinpoint a single country as their country of publication.

English was the main language for 66 percent of the surveyed journals, Spanish in 14 percent and Portuguese in five percent. Various languages and combinations of smaller languages and English account for 15 percent of the total.

Comparisons with the DOAJ population were difficult, as DOAJ lists all languages that a journal uses. As mentioned previously, the survey has a bias towards over-representing journals published in Western European languages. Furthermore, I was not able to secure comparable data on country of publication from DOAJ. Hence, I do not have a clear picture of bias in the sample relative to the geographical distribution of journals.

Use of advertising

Obviously, the question of acceptance of advertising by journals was one of the most important in the survey.

Publisher size	1	2–5	6–10	11–15	16–20	21–50	51–100	188	Total
Not accepting advertising	217	36	17	4	1			3	278
Accepting advertising	56	10	3	2	1	1	3	1	77
Total	273	46	20	6	2	1	3	4	355
Not accepting advertising	79%	78%	85%	67%	50%	0%	0%	75%	78%
Accepting advertising	21%	22%	15%	33%	50%	100%	100%	25%	22%

Except for the largest publisher, there is an increasing tendency to accept advertising as the size of the publisher — in terms of number of journals published — increases. However, verification of the reports reveals that the numbers for the largest publisher is misleading, as two of three journals answering that they do not accept advertising, actually have advertising on their Web sites. This problem could be a result of editors, not publishers, answering the questionnaire. Editors for larger publishers often will not have anything to do with advertising, which is in the realm of the publisher.

In addition to the 355 journals in Table 2, there were another 22 journals that we could not identify in DOAJ, so they cannot be classified according to publisher size. If we include them in the total, we end up with 21 percent of the surveyed journals accepting advertising. It seems fair to assume that a majority of these 22 journals would have ended in the single journal publisher category — which includes more than three-quarters of all surveyed journals. That would bring the percentage of journals accepting advertising to slightly less than 20 percent.

Even though absolute numbers for medium-sized and larger publishers were small, the survey shows a tendency for small publishers not to accept advertising, while larger publishers are more likely to exploit this source of income [5]. Remembering that the smallest publishers — single journal publishers — are greatly over-represented in the survey, a reasonable estimate for the percentage of journals accepting advertising should lie somewhere between 22 and 25 percent.

Publisher size	1	2–5	6–10	11–15	16–20	21–50	51–100	188	Total
Not accepting advertising	77,918	4,676	9,632	1,248	100			305	93,879
Accepting advertising	27,399	1,037	920	750	200	30	40,050	80	70,466
Total	105,317	5,713	10,522	1,998	300	30	40,050	385	164,345

Not accepting advertising	74%	82%	91%	62%	33%	0%	0%	79%	57%
Accepting advertising	26%	18%	9%	38%	67%	100%	100%	21%	43%

If we look at articles, not journals, the picture was similar. All journals were asked to provide an estimate of the number of articles published on the Internet. Any given article may be surrounded by advertising. For larger journals, the numbers corresponded closely but the numbers for the largest publisher were misleading. For the mid-sized group of publishers the numbers differed, but the absolute numbers were too small to be significant. In total, about 43 percent of articles were published in journals accepting advertising. However, more than half of these were published in three journals in the journal size 51–100 category, influencing the average heavily. If we include articles from 22 journals that we could not identify in DOAJ, and hence have no information about the size of the publisher, 39 percent of articles were published in journals accepting advertising.

The interesting difference — between the percentages based on number of journals and the percentages based on the number of articles — lies in the group of journals published by single-journal publishers. Twenty-one percent of these journals accepted advertising, but 26% of articles published in these journals were published in journals accepting advertising. The difference can only be explained by larger journals (those with many articles) accepting advertising to a larger extent than smaller journals. Table 4 illustrates a tendency in this direction with the percentage of journals published by single-journal publishers accepting advertising increasing as the number of articles in a given journal increases.

Table 4: Journals published by single-journal publishers accepting advertising or not accepting advertising, by journal size.				
Number of articles	Accepting advertising?		Total	Percentage accepting advertising
	No	Yes		
1–250	164	35	199	18%
251–500	30	10	40	25%
501–750	8	3	11	27%
751–1,000	5	4	9	44%
1,001–1,250	2	1	3	33%
1,251–1,500	3	1	4	25%
1,751–2,000	1		1	0%
2,751–3,000	2		2	0%
3,751–4,000		1	1	100%
5,751–6,000	1		1	0%
7,501–7,750		1	1	100%

22,001– 22,250	1		1	0%
Total	217	56	273	21%

As the absolute numbers of journals in the categories of more than 500 articles are small, one should be careful not to draw conclusions based on the data. However, it seems reasonable to associate acceptance of advertising with larger journals in terms of number of articles published.

What are the reasons for not accepting advertising?

Table 5: Reasons for not accepting advertising (multiple answers per journal possible).									
Reason	Publisher size								Percentage not accepting advertising
	1	2– 5	6– 10	11 – 15	16– 100	188	N/A	Total	
It is our policy not to have advertising.	94	16	7	2	1	1	6	127	43%
Scientific journals should not have advertising.	57	5	4	3			3	72	24%
The potential income is too small to be interesting.	32	5		1		1	4	43	14%
We do not want the extra work associated with advertising.	38	6	1			2	4	51	17%
Our publishing solution does not easily allow advertising.	33	3	3			1	1	41	14%
We haven't thought of it.	56	9	3	1			8	77	26%
Other	31	9	1			1		42	14%
								453	
Number of journals in sample	273	46	20	6	6	4	22	377	

Overall, 298 out of 377 journals did not accept advertising. Respondents were presented with a list of possible reasons for not accepting advertising, and had the option of formulating their own reason by choosing "Other". Some respondents selected more than one reason, so that the number of answers does not equal the total number of journals. Not all journals not accepting advertising provided a reason.

A working hypothesis in this research was that there was a strong non-commercial bias, making advertising undesirable for many journals. The survey confirmed this non-commercial bias, but there were more practical considerations equally, or more, important.

The most common answer (43 percent) was that a given journal had a policy of not accepting advertising. This is essentially a statement of policy. However, 60 of the 127 journals stating this reason provided no other explanation for not accepting advertising. Of the remaining 67 journals, 42 answered that scientific journals should not include advertising in their pages. Nine journals with a policy of not accepting advertising also answered that they had not thought of it.

That scientific journals should not have advertising was given as an answer by 24 percent of journals not accepting advertising. It is possible that some of the 60 journals stating that they have a policy of not accepting advertising may have agreed with this statement. Hence there is support for a working hypothesis that there was a strong non-commercial bias among scholarly journals, but it was not as widespread as one would have imagined.

Practical considerations — income potential too small, extra work or problems with a given publishing solution — each accounted for a substantial number of journals. A total of 98 journals (33 percent) had given one of more of these reasons for not accepting advertising. Many provided other reasons as well.

The "Other" category (14 percent) covered a number of reasons, but was also used to express interest in accepting advertising in the future.

It was surprising that 77 journals (26 percent) of non-advertising journals noted that they had not thought of using advertising as a source of income.

There is a strong sentiment that advertising is inappropriate for scholarly journals, but practical considerations and a lack of knowledge about the potentials and possibilities of advertising were major factors in explaining the attitudes of some journals towards advertising.

What kind of advertising is accepted?

There are various strategies for accepting advertising, differing in income potential, amount of work and possible conflicts of interest. Respondents were presented with a number of different kinds of advertising, and could choose one or more kind of advertising as being relevant to their journal. An "Other" category was also provided for advertising that did not fit into the categories listed in the survey. Altogether, 79 journals participating in the survey accepted advertising in some form, some accepting more than one kind of advertising. Overall, there were 95 replies to what kind of advertising was used. Seventeen "other" answers covered a number of different aspects, with limiting advertising to specific scientific partners (institutions, conferences, journals, products or services) being the most common answer.

	Publisher size									
Advertising selection	1	2–5	6–10	11–15	16–20	21–50	51–100	188	N/A	Total
We deal directly with firms interested in	39	6	3	1	1	1	3		2	56

advertising in our journal.											
We are members of one or more affiliate programs.	1		1	1							3
We are members of one ore more affiliate networks like ValueClick, TradeDoubler, and CommissionJunction.	1		1								2
We provide links to books through affiliation with an Internet bookstore like Amazon.	4	1									5
We use Google AdSense.	8	1		1			2				12
Other sources of advertising.	13	3							1		17
Total											95
Number of journals in total sample	273	46	20	6	2	1	3	4	22		377

Given the small size of the sample, we are cautious in drawing any firm conclusions. However, we see that there are two main strategies for generating advertising income — directly working with prospective advertisers and using Google AdSense. Affiliation in various forms was only used by a handful of journals.

It was surprising that directly working with prospective advertisers was the most common way of generating advertising income. More than two-thirds of the journals accepting advertising selected this option (56 journals of 79; 71 percent). This methodology is the most time-consuming and expensive means of generating advertising income, as a given journal needs to invest time both in handling prospective advertisers and managing the practicalities of advertising such as reporting and invoicing a specific advertiser. It is also the kind of advertising that could open a journal to possible conflicts of interest and to potential editorial pressure from advertisers. Nevertheless, this solution provides a given journal control over the nature of advertisements, allowing a journal to exploit its networks and market potential to the fullest.

Google AdSense is quite different from working directly with advertisers. It is simple to implement and has little administrative overhead. However a given journal has no control over what products and services are advertised and what kinds of ads will be viewed by readers. There is little control over income as well.

My advance hypothesis before the survey was that smaller journals would use Google AdSense, while larger journals would deal directly with advertisers. This would be consistent with the administrative resources that one would assume available for journals of different sizes. The survey supported the notion that larger journals dealt directly with advertisers, but surprisingly smaller journals also worked directly with advertisers and did not *en masse* use Google AdSense.

What is the income potential of advertising?

In order to advise journal editors, we wanted to understand the potential for income. We also wanted to see if we could find any connection between journal publishing language, journal size and other factors with advertising income.

We asked for financial information only if journals used Google AdSense. This kind of advertising is probably highly dependent on background variables in deciding income potential. With other forms of advertising there are a number of other variables that would affect income potential. Thus, we saw Google AdSense as the easiest advertising strategy to analyze.

Much to our surprise, no journal using Google AdSense was willing to share financial and statistical information in our survey. Hence, we are unable to report on the advertising income potential for OA journals.




Conclusion

This survey demonstrated that advertising was used to generate income for some OA journals but was not widespread. This was due partly to ideological motives, but also to practical considerations and a lack of knowledge about possibilities.

There was some indication that the tendency to use advertising as a source of income increased with increased size of a given publisher, in terms of the number of journals published, and with increased size of a given journal, in terms of articles published. This could be due to larger publishers having more administrative resources, thus being able to utilize these resources to generate income. It could also be a result of increased pressure from patrons or hosting or co-operating institutions to generate income.

There was some indication that the strategies chosen for generating advertising revenue were not optimal. Strategies placing a heavy administrative burden on journals were favoured over less burdensome strategies. These decisions could reflect a lack of experience about alternatives.

More information about advertising as a possible source of income for open access journals is sorely needed. Further research is needed in understanding the complex administrative behaviors of open access journals and their editors and publishers. 

About the author

Jan Erik Frantsvåg is an economist working at the University Library of Tromsø. He has a lower degree in economics, banking and computer science from the University of Bergen (1985) and has later studied documentation science at the University of Tromsø, where he currently is studying for a Master's degree.

After a career in banking, he joined the finance department of the university administration in Tromsø in 1993. He has held various administrative positions in the finance and computing departments, and at the faculty of humanities. Since 2006, he has been working full-time on open access at the University Library.

He is currently chair of NORA — Norwegian Open Research Archives, a co-operation between the Norwegian Institutional Repositories. This article is a result of his involvement in the Nordic project "Aiding Scientific Journals Towards Open Access Publishing," where he has been focusing on business models for open access journals.

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Notes

1. Solomon, 2008, p. 122.
2. Crow, 2009, pp. 16–20.
3. See, for example, Michael D. Mills, Robert J. Esterhay, and Judah Thornewill, 2007. "Using a Tetradic Network Technique and a Transaction Cost Economic Analysis to illustrate an economic model for an open access medical journal," *First Monday*, volume 12 number 10, at <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/1964/1840>.
4. For a more detailed introduction to advertising possibilities in OA journals, see the NOAP wiki (*Advertising*) or Crow (2009), pp. 16–2.
5. Hindawi, which did not participate in the survey, seems to be a notable exception.

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The role of advertising in financing open access journals
by Jan Erik Frantsovåg.

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Article 2 The size distribution of open access publishers: A problem for open access?

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<http://scholarlykitchen.sspnet.org/2010/12/16/for-open-access-journals-size-does-matter/> (Davis 2010)

<http://friendfeed.com/science-2-0/a77bbe55/size-distribution-of-open-access-publishers>

(Røst 2010)

First Monday, Volume 15, Number 12 - 6 December 2010



The size distribution of open access publishers: A problem for open access?

by Jan Erik Frantsvåg

Abstract

I stumbled across the question of publisher size while preparing for an earlier article. From the viewpoint of an economist, the size distribution of open access publishers looked inefficient. In this article I first explore reasons to be sceptical to a situation with a large number of small publishers. Then I go through the numbers from the *Directory of Open Access Journals*, also discussing problems inherent in the material. The results are then compared to similar data about toll access publishing. A conclusion is that, even though numbers may lack in exactitude, there seems to be a need for institutions to look at how they organize their publishing activities.

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Introduction

Analyzing data for a previous article (Frantsvåg, 2010), I stumbled across the question of the size distribution of open access (OA) publishers. A quick analysis of *Directory of Open Access Journals (DOAJ)* data at that time suggested that the distribution was extremely skewed, with single journal publishers dominating at nearly 90 percent of all publishers, publishing the majority of OA journals. Larger publishers were few, and accounted for about 25 percent of all journals. OA publishing seems, in other words, to be a small-scale industry.

Why should this concern us? In economics, we learn that size is important in various ways. Economics is — in this context — not to be confused with profit maximization, it is the science of how one household's resources in order to maximize one's goals. For a commercial publisher, this could mean maximizing profits. For an institution-based scholarly publisher, this goal to be maximized could be dissemination of scientific content. In this article, I will take dissemination of scientific content to be the primary goal of small OA publishers. Any resource use that is inefficient will be detrimental to this goal — increased efficiency will bring more dissemination at the same cost, or the same level of dissemination at a lower cost. Both situations will be more advantageous to science than a less efficient one.

How does size influence economic efficiency? There are two major concepts that we should look at here, “(average) fixed costs” and “economies of scale”. These concepts are treated in most general introductory economics textbooks [1]. In the discussion, I will look on a journal as an institution (“factory”) that produces quality–assured scientific articles.

Fixed costs

Fixed costs are costs that are the same whatever the size of the output (here: the number of articles published). In OA journal publishing this could be annual service payments to some external or internal service provider, annual fees for some subscription, etc. It also covers the annual depreciation of initial investments that has been made, *i.e.*, the investment cost is divided over the expected life of the investment. For example, an editor in a small journal often has to invest a lot of time in learning the technicalities of the publishing system, the hows and whys of getting the journal listed and embedded in various Internet services, etc. These costs are seen to be “used” over the time the editor works for the journal.

The sum of these annual costs divided by the number of articles published becomes the average fixed cost of an article. Clearly, the higher the number of articles, the lower the average fixed cost.

Economies of scale

Economies of scale (not to be confused with “returns to scale”, which is a very theoretical concept not to be discussed here) is about the efficiency of the production. Economic theory (based on observation of reality) holds that as production increases, the effort of producing another unit (in this discussion: another article) could become lower. This is because the persons involved in the production gains knowledge and experience, and also because increased production gradually will allow specialization among the persons involved. People will increasingly specialize and concentrate on the elements of the production process that they are good at, instead of having to do everything. This also means that the average variable cost (the costs that are not fixed) of producing an article will decrease as the volume of articles in a journal, or in a publishing venture, increases.

Other size–related matters

Polydoratou, *et al.* 2010) and Polydoratou and Schimmer (2010) found that there are important differences in financing between smaller and larger publishers, with the smaller ones being more reliant on sponsorship for their operations. These findings are further explored in Dallmeier–Tiessen, *et al.* (2010).

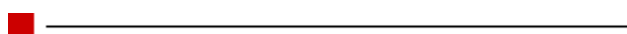
A quick glance at the *DOAJ* Web site (<http://www.doaj.org/>, as of 21 October 2010) indicates that less than half (2,361 of 5,542) of the journals are searchable at article level. Delivering article metadata is an important function in order to have content widely disseminated. Larger publishers generally make sure their content metadata is to be found in *DOAJ*. It is the smaller publishers who do not use this functionality, which is free to use and — provided you have the right software — simple to use. Smaller publishers do not have the right software or minimal resources needed to exploit this service — or they lack the necessary competence to see the need to use it. Whatever the reason, the result is less efficient dissemination of their content.

Hicks and Wang (in press) shows that journals from smaller publishers suffer disadvantages in being recognized as scholarly and in being efficiently distributed.

Consequences

All these elements suggest that small–scale operation of OA publishing is economically inefficient, and that OA publishing best be organized in larger publishing institutions.

In this article I will try to establish some facts about the size distribution of OA publishers in terms of journals published, and discuss what consequences the findings could have. This will also lead to a discussion of similar traits in TA publishing.



Method

While it is the number of articles that really says something about the size of publishers in terms of efficiency, in the following discussion I will use the number of journals per publisher as an indication of size. This is because these data are more readily available than the number of articles published. The *Directory of Open Access Journals (DOAJ)*, considered to be the best source of information about OA journals) has no data on the annual output in terms of articles published of the journals they list. They have information on the number of articles publishers have uploaded metadata for, but these numbers haven't been made available and they could also be misleading as there is much uploading of metadata for old articles.

On 5 August 2010, I downloaded a file of all *DOAJ* journals from the *DOAJ* Web site, using the link <http://www.doaj.org/doaj?func=csv> on the *DOAJ* FAQ Web page (<http://www.doaj.org/doaj?func=loadTempl&templ=fag>). An Excel file containing both the downloaded raw data and the various tables and numbers constructed on the basis of these data is available as supplementary files to accompany this article.

The raw data file contained 5,256 titles. 95 titles that were listed with a value in the column "End Year" were excluded from further analysis, leaving a total of 5,161 titles.

Using the pivot functionality in MS Excel, a table listing all unique publishers in the raw data file and giving the number of journals listed per publisher was constructed. In this table, 3,316 unique publishers were listed. However, on inspection a number of publishers were listed twice, and this turned out to be due to extraneous blanks in the Publisher field for some records. Removing these extraneous blanks, using Excel's "trim" function, reduced the number of publishers to 3,231.

Publishers — sources of error

The sorting and counting by publisher is based on the content of the field "Publisher" in the *DOAJ* file. There are a number of problems with this approach.

One problem is the trivial one mentioned earlier, that the occurrence of some extraneous blanks makes Excel distinguish between publishers that are really one and the same. This source of error is easily corrected — if it is detected.

A source of error closely connected to this is spelling variants — *e.g.*, the use of "and" and "&" — and different names of the same publisher in different languages. There is no reason to believe that "Igitur, Utrecht Publishing & Archiving Services" and "Igitur, Utrecht Publishing and Archiving Services" actually are two different publishers. There are a number of such "near misses" in the data, but as I have no secure method of discerning between intended and non-intended small differences in spelling, I have chosen not to correct even the errors that seem self-evident errors. This will mean that the number of publishers in the analysis is larger than what is really true, bringing the average number of journals per publisher lower than what is correct [2].

A source of error that is more difficult to handle and to have some idea of the size of, is what is meant by publisher in the *DOAJ* data set. Is this the editorial organization, or is it the publishing institution — and if institution, on what level? And will similarities or dissimilarities indicate whether the technical production — which is the most important when it comes to production cost — is organized as larger units common to a number of journals, or is organized by the individual journals? One could imagine that a number of journals have the same publisher listed in *DOAJ* (*e.g.*, the publisher could be a university), but the production could still be done by individual journals. On the other hand, one could imagine institutions where production is centralized but where the publisher listed is the institute the journal belongs to, etc. I suspect that we will find errors both ways in the data, but I find it probable that this kind of error on the whole also will tend to exaggerate the number of small or single journal publishers.

In *DOAJ*, we only have information about OA journals. We know, however, that some OA journals are published by publishers that also publish toll access (TA) journals. The efficiency of a publisher — as we discuss it here — is not dependent upon whether their journals are

published OA or TA, but on their total size. In order to gain some idea of this (and other aspects of what is discussed here) we bought a data set from *Ulrich's Periodicals Directory* (received on 22 February 2010) containing active, academic, refereed journals from their publication database. Unfortunately, *Ulrich's* forbid me to post these data with this paper. In the Ulrich file, we found 9,970 publishers publishing 24,263 journals. Of these publishers, 229 publish both OA and TA journals: 996 OA and 3,016 TA, making a total of 4,012 journals.

		Number of TA journals														
		1	2	3	4	5	6	7	8	9	10	11–20	21–50	51–100	101–	Total
Number of TA journals	1															
	1	93	24	9	8	3	2	6	2	3	1	8	3	2	4	168
	2	4	3	3	1	1	1	1	1	1			3	3	1	23
	3	2	3	2	1	1		1	1							11
	4	1	1			1	1	1				2			1	8
	5	3				1										4
	6–10	1	1	1	1	1						1				6
	11–20	1	1													2
	21–50			1	1		1									3
	51–100							1								1
	100+												3			3
	Total	105	33	16	12	8	6	9	3	5	1	11	9	4	6	229

Note: N=229.
Statistical data derived from *Ulrich's Periodicals Directory*, © 2010 ProQuest LLC. All rights reserved.

The picture we get is that publishing both OA and TA only occurs with a minority of OA publishers. Of 1,633 OA publishers in *Ulrich's*, 229 also publish TA. Nearly half of these OA publishers (105) publish one OA journal, 93 of these publish one TA journal additionally. The general picture is that of small OA publishers publishing few additional TA journals, and that additional TA publishing doesn't really alter the publisher size of OA publishers in any substantial way. Few small OA publishers would become significantly larger by adding TA publishing. Of course, there are exceptions — most notably Routledge, with one OA journal and 837 TA journals.

A fourth source of errors is the existence of OA journals that are not listed in *DOAJ*. This is by definition an unknown quantity. We know that OJS (Open Journals Systems at <http://pkp.sfu.ca/ojs/>), the most common platform for OA journals, has some 6,600 installations. *DOAJ* lists 5,258 journals, many of which do not use OJS. One installation of OJS can cover a virtually unlimited number of journals. On the other hand, OJS is also used for non-OA journals. Comparing the file from *Ulrich's*, we find that of the 2,639 OA journals listed there, 131 journals are not in *DOAJ* if we do a lookup in the *DOAJ* file based on the ISSN in *Ulrich's* file (journals without an ISSN in the *Ulrich's* file being excluded) [3]. We can probably conclude that there are a number of OA journals out there that are not included in our numbers. As listing in *DOAJ* actually is useful for OA journals, we can also conclude that a vast majority of these unlisted journals are published by single journal publishers that are not

currently listed in *DOAJ*. This source of error will under-estimate the number of single journal publishers. Whether this source of error is larger than the other sources of error mentioned, is impossible to say, but this last error will at least to some extent even out the effect of the other sources of error.

The possible errors, seen as a whole, indicate that the numbers found in *DOAJ* — and used here — will give a fairly good picture of the current realities when it comes to actual size of OA publishers measured in terms of the number of journals they publish.



Results

Ordering the publishers by their size in terms of the number of journals they publish and counting the number of publishers that have a given size, we arrive at [Table 2](#) after grouping the larger publishers in size groups. The grouping is somewhat arbitrary, but is chosen so that the numbers could be useful in later analysis.

Publisher size	Number		Percentage of total	
	Publisher	Journals	Publisher	Journals
1	2,839	2,839	87.9%	55.0%
2	212	424	6.6%	8.2%
3	50	150	1.5%	2.9%
4	30	120	0.9%	2.6%
5	16	80	0.5%	1.6%
6	16	96	0.5%	1.9%
7	13	91	0.4%	1.8%
8	9	72	0.3%	1.4%
9	7	63	0.2%	1.2%
10	2	20	0.1%	0.4%
11–20	26	357	0.8%	6.9%
21–50	6	183	0.2%	3.5%
51–100	2	132	0.1%	2.6%
100+	3	534	0.1%	10.3%
	3,231	5,161	100.0%	100.0%

Note: N=3,231.

As we see, 87.9 percent of all publishers publish only a single journal (amounting to 55 percent of all journals) while the larger publishers (with more than 10 journals) [\[4\]](#) total 1.1 percent of all publishers and publish 23.3 percent of all journals. We also note that the average number of journals per publisher is near to 1.6, while the median and mode of number of journals per publisher are both 1.



Consequences

It could seem reasonable, based on what economics tells us, and the data we have, to conclude that open access publishing, as it is organized today, is vastly inefficient compared to traditional publishing and that it either should be abolished or strongly re-organized. The data seem to indicate that OA publishing, as a whole, is ready to take advantage of any diseconomy of scale, and every inefficiency, available. A natural conclusion could be that OA publishing in its present form should be abolished.



Toll access publishing

But are things really that different in traditional publishing? If we, once again, turn to *Ulrich's* and perform the same analysis, we get the following picture. (In this analysis we exclude publishers that only publish OA, in order to create the maximum contrast between the two sets of data. For TA publishers, the OA journals they publish are counted.)

Ulrich's list 9,970 publishers publishing 24,263 journals. Of these, 1404 publishers publish only OA journals, with a total publishing volume of 1,643 journals. The remaining 8,566 publishers publish 22,620 journals (996 OA and 21,624 TA).

Publisher size	Number		Percentage of	
	Publishers	Journals published	Publishers	Journals
1	7,168	7,168	83.7%	31.7%
2	671	1,342	7.8%	5.9%
3	186	558	2.2%	2.5%
4	116	464	1.4%	2.1%
5	76	380	0.9%	1.7%
6	46	276	0.5%	1.2%
7	28	196	0.3%	0.9%
8	29	232	0.3%	1.0%
9	21	189	0.2%	0.8%
10	25	250	0.3%	1.1%
11–20	85	1,221	1.0%	5.4%
21–50	66	1,984	0.8%	8.8%
51–100	22	1,632	0.3%	7.2%
100+	27	6,728	0.3%	29.7%
	8,566	22,620	100.0%	100.0%

* The number of journals include OA journals, but publishers that only publish OA journals are excluded. N=8,566.
 Statistical data derived from *Ulrich's Periodicals Directory*, © 2010 ProQuest LLC. All rights reserved.

[Table 3](#), though different from [Table 2](#), shows a remarkable likeness to it in that the single journal publishers dominate, being 83.7 percent of the total number of publishers. For OA publishers (Table 2) the percentage is 87.9.

If we combine Tables 2 and 3, we arrive at Table 4 which makes it easier to compare the two groups of publishers.

Publisher size	TA publishers with or without OA (Ulrich's*)				OA publishers (DOAJ)			
	Number		Percentage of		Number		Percentage of	
	Publishers	Journals published	Publishers	Journals	Publishers	Journals	Publishers	Journals
1	7,168	7,168	83.7%	31.7%	2,839	2,839	87.9%	55.0%
2	671	1,342	7.8%	5.9%	212	424	6.6%	8.2%
3	186	558	2.2%	2.5%	50	150	1.5%	2.9%
4	116	464	1.4%	2.1%	30	120	0.9%	2.3%
5	76	380	0.9%	1.7%	16	80	0.5%	1.6%
6	46	276	0.5%	1.2%	16	96	0.5%	1.9%
7	28	196	0.3%	0.9%	13	91	0.4%	1.8%
8	29	232	0.3%	1.0%	9	72	0.3%	1.4%
9	21	189	0.2%	0.8%	7	63	0.2%	1.2%
10	25	250	0.3%	1.1%	2	20	0.1%	0.4%
11–20	85	1,221	1.0%	5.4%	26	357	0.8%	6.9%
21–50	66	1,984	0.8%	0.8%	6	183	0.2%	3.5%
51–100	22	1,632	0.3%	7.2%	2	132	0.1%	2.6%
100+	27	6,728	0.3%	29.7%	23	534	0.1%	10.3%
	8,566	22,620	100.0%	100.0%	3,231	5,161	100.0%	100.0%
Average	2.64				1.60			
Mean	1				1			
Mode	1				1			
* Statistical data derived from <i>Ulrich's Periodicals Directory</i> , © 2010 ProQuest LLC. All rights reserved.								

The typical publisher in both TA and OA is a single-journal publisher, and such publishers comprise more than 80 percent of all publishers. In TA publishing there are a larger number and fraction of publishers publishing more than 20 journals than in OA, so that the average number of journals per publisher is higher for TA than for OA. We also see that the fraction of TA journals being published by the largest publishers is greater than for OA journals.

We know that TA publishing over the last decades has undergone restructuring, where medium-sized publishers have been acquired by larger publishers, creating a number of very large publishers. This concentration has not yet started in OA publishing. The difference in average number of journals per publishers could be ascribed to this concentration process, so that we could expect the numbers in OA publishing to become more like TA publishing numbers in the future. The TA publishing business is, after all, centuries old, while OA publishing started about a decade ago.


Both in TA and OA publishing, a general picture — looking at the raw data — is that the professional, commercial publishers are among the larger publishers, while institutional publishers and publishers representing professional societies are small. This is corroborated by Polydoratou, *et al.* (2010).



Conclusion

This analysis is not without flaws. However, both OA and TA publishing — covering major parts of publishing output — are highly inefficient. Professional publishers are organized in large corporations, having a large number of journals and producing their output in a relatively efficient way. Other publishers — mainly professional societies and academic institutions — have organized their publishing — be it OA or TA — in inefficient ways.

Academic institutions need to look at ways to organize the technical side of publishing in new ways in order to exploit efficiencies of size, so that dissemination can be both less costly and more efficient. This is not an argument against OA publishing; this concerns TA publishing as well. But in a process of transitioning to OA, one should take care to organize OA in a way that will truly serve scholarship.

Much debate over the economics of OA turns around business models for large and medium-sized publishers. The numbers presented here should demonstrate a need to create debate and research that is more relevant to the small OA publishers — after all, they are the vast majority! 

About the author

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Notes

- [1.](#) See *e.g.*, Sloman and Sutcliffe, 1991, pp. 140–178 or Samuelson and Nordhaus, 1989, pp. 472, 498–531.
- [2.](#) Hopefully, this discussion could lead to publishers looking through their *DOAJ* data and correcting and standardizing their information there.
- [3.](#) There is some reason for concern about data quality: Of the 2,639 OA journals in *Ulrich's*, 1,070 has some kind of difference in the journal name between *DOAJ* and *Ulrich's*. Most differences seem to be trivial, but still.

4. The definition of “large” in this context is arbitrary. Any publisher publishing more than four journals is among the 100 largest publishers in this data set.

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The size distribution of open access publishers: A problem for open access?
by Jan Erik Frantsvåg.

First Monday, Volume 15, Number 12 - 6 December 2010

<http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/rt/printerFriendly/3208/2726>

Article 3 The size distribution of Open Access publishers – is it going in the right direction?

This is a manuscript, intended to be published in First Monday or a similar journal.

The article compares the size distribution of OA publishers at different dates, and looks at how publishers have been recruited and grown over the time period studied. It should also have looked at how the TA publishing has evolved over roughly the same period. However, Ulrich's, which provided data for article no. 2 "The size distribution of open access publishers: A problem for open access?", has after four months not been able to respond to my request for a new data set.

Hopefully they will – at some unknown point in the future – be able to come back to me with an answer, enabling me to incorporate also this aspect in my analysis and comparison of the two, OA and TA, publishing industries.

Given the absolute deadline my institute has given me to finish my Master's degree I found it, despite its incompleteness, necessary to incorporate this unfinished manuscript in my thesis. The intention was, of course, to have a finished manuscript, already submitted, as this third article.

The size distribution of Open Access publishers – Is it going in the right direction?

Introduction

In a previous article (Frantsvåg 2010) I found that Open Access (OA) publishing was characterized by a large number of single-journal publishers, publishing a majority of OA journals. This is, seen from an economic viewpoint, highly inefficient, and the article advises institutions to look at how they organize their publishing activities.

The article also shows that even if Toll Access (TA) publishing seems more centralized, the similarities between TA and OA are overwhelming, with single journal publishers being more than 80 percent of publishers both in TA and OA. The difference is that single journal publishers publish 31 percent of journals in TA, but 55 percent in OA. And the largest publishers (publishing 100+ journals) publish 29.7 percent of journals in TA, but only 10.3 percent in OA.

TA journal publishing has evolved over nearly three and a half century, since the first journals were published in 1665 (Kronick 1976 v). Journals at that time sprung out of scientific institutions like museums, societies and universities, and were published by the institutions themselves. Gradually, work was being outsourced to others, e.g. publishers were commissioned to publish the journals for societies, i.e. the publishers took over the practicalities of the publishing process but the society was still the owner and took all economic risk. Gradually, this developed into professional, commercial publishing ventures that both took over existing journals and started developing new journals. Over the last decades these commercial publishers have been amalgamating into very

large publishing companies, some of them publishing hundreds of journals. Still, there are a large number of smaller, single journal publishers active in TA publishing.

OA publishing started around the year 2000. As with TA publishing, many OA journals spring out of societies and scientific communities, based at some institution. Commercial publishers are relatively few, and so far they are most active and visible within the STM (Science, Technology and Medicine) segment of publishing.

My thesis is that it will be beneficial for science if OA publishing also evolves along the lines of TA publishing, with larger, commercial or institution-based publishers offering services to the scientific community. This will both keep costs lower and increase the level of professionalism in the technicalities of publishing and disseminating, increasing the impact of the scientific content published.

But is OA publishing evolving in this (in my opinion) beneficial direction? And if yes, with a speed that is satisfying – or should effort be spent on increasing it? From previous studies I have kept original data downloaded from DOAJ (the Directory of Open Access Journals) on May 13th 2009, February 3rd 2010, August 5th 2010 and December 31st 2010. Comparing information contained in these data sets – mainly the oldest and the newest – should, even if they cover only 1 ½ year, give us some idea if things are going as we hope.

The data

The data used are data downloaded from DOAJ (*DOAJ – Directory of Open Access Journals* 2011) at various dates (listed above) by using the function

<http://www.doaj.org/doaj?func=csv> on the DOAJ webpage

<http://www.doaj.org/doaj?func=loadTempl&templ=faq#metadata>. The data sets

downloaded contain information about every journal listed in DOAJ, like publisher name, ISSN, language, subject category etc.

The data were then made ready for use by taking out records for journals that had an end year, and removing extra blanks in the publisher name as this would lead to one publisher being counted as two. Using the pivot functionality of MS Excel, tables were then created showing the number of journals per publisher.

There are a number of problems with this approach to counting journals per publisher; this is discussed in detail in (Frantsvåg 2010), I refer the reader to that article for further insight. The problems with this approach to counting journals per publisher should be consistent over the time period; hence it should not create serious problems for an analysis of change over time like this.

What the data shows

Sorting and summing up data from the pivot tables created in the four spreadsheets, we can create the following table:

Table 1 Publishers and journals 2009–2010 by publisher size (measured by the number of journals per publisher)

Publisher size: Number of journals	Number of Publishers				Journals published			
	13 May '09	3 Feb '10	5 Aug '10	31 Dec '10	13 May '09	3 Feb '10	5 Aug '10	31 Dec '10
1	2382	2558	2839	3165	2382	2558	2839	3165
2	149	175	212	248	298	350	424	496
3	33	40	50	66	99	120	150	198
4	22	17	30	33	88	68	120	132
5	16	19	16	25	80	95	80	125
6-10	31	36	47	43	235	257	342	322
11-20	16	24	26	33	220	328	357	461
21-50	4	5	6	5	112	160	183	157
51-100	3	2	2	3	222	129	132	206
100+	2	3	3	3	343	498	534	567
Total	2658	2879	3231	3624	4079	4563	5161	5829
Avg. no of journals per publisher	1.535	1.585	1.597	1.608				

It is, of course, difficult to get a clear picture from a table as the one above.

Converting the numbers into percentages of the total in each column, we get this table:

Table 2 Publishers and journals 2009–2010 by publisher size, percent of column totals

Publisher size: Number of journals	Number of Publishers				Journals published			
	13 May '09	3 Feb '10	5 Aug '10	31 Dec '10	13 May '09	3 Feb '10	5 Aug '10	31 Dec '10
1	89.6 %	88.9 %	87.9 %	87.3 %	58.4 %	56.1 %	55.0 %	54.3 %
2	5.6 %	6.1 %	6.6 %	6.8 %	7.3 %	7.7 %	8.2 %	8.5 %
3	1.2 %	1.4 %	1.5 %	1.8 %	2.4 %	2.6 %	2.9 %	3.4 %
4	0.8 %	0.6 %	0.9 %	0.9 %	2.2 %	1.5 %	2.3 %	2.3 %
5	0.6 %	0.7 %	0.5 %	0.7 %	2.0 %	2.1 %	1.6 %	2.1 %
6-10	1.2 %	1.3 %	1.5 %	1.2 %	5.8 %	5.6 %	6.6 %	5.5 %
11-20	0.6 %	0.8 %	0.8 %	0.9 %	5.4 %	7.2 %	6.9 %	7.9 %
21-50	0.2 %	0.2 %	0.2 %	0.1 %	2.7 %	3.5 %	3.5 %	2.7 %
51-100	0.1 %	0.1 %	0.1 %	0.1 %	5.4 %	2.8 %	2.6 %	3.5 %
100+	0.1 %	0.1 %	0.1 %	0.1 %	8.4 %	10.9 %	10.3 %	9.7 %
Total	2658	2879	3231	3624	4079	4563	5161	5829

Even this picture is not necessarily very clear, for most publisher sizes the percentages go a bit up and down without any clear direction.

A more condensed view may clear things up a bit:

Table 3 Publishers and journals 2009–2010 by publisher size, percent of column totals - aggregated

Publisher size: Number of journals	Number of Publishers				Journals published			
	13 May '09	3 Feb '10	5 Aug '10	31 Dec '10	13 May '09	3 Feb '10	5 Aug '10	31 Dec '10
1	89.6 %	88.9 %	87.9 %	87.3 %	58.4 %	56.1 %	55.0 %	54.3 %
2	5.6 %	6.1 %	6.6 %	6.8 %	7.3 %	7.7 %	8.2 %	8.5 %
3	1.2 %	1.4 %	1.5 %	1.8 %	2.4 %	2.6 %	2.9 %	3.4 %
3+	3.5 %	3.7 %	4.0 %	4.0 %	31.9 %	33.6 %	33.9 %	33.8 %
Total	2658	2879	3231	3624	4079	4563	5161	5829

We now clearly see that the single journal publishers, despite a marked growth from 2382 to 3165, has declined from being 89.6 percent of publishers to 87.3, and that their share of journals published has gone from 58.4 to 54.3 percent, an even larger decline

than in the percentage of publishers. At the same time, the publishers publishing 2 and 3 journals have increased their share of both publishers and journals, the same goes for publishers publishing more than 3 journals. The category “more than 3” is very diverse, and it is the “11–20” and “100+” categories that have had significant growth in their share of journals published, the “11–20” also in their share of publishers. Other categories have had a more uneven development, i.e. smaller positive or negative changes fluctuating over the period, or even a decline as e.g. the “51–100” category whose share of journals has gone from 5.4 percent to 3.5, and has been as low as 2.8 at one point of time. The categories with the largest number of journals per publisher have few members, so changes can be spurious. One reason for the relative decline of the “51–100” category is that one publisher grew into the next, “100+”, category. So the only safe conclusion to draw so far is that the single journal publishers are on the decline as a percentage of publishers and journals, while the publishers publishing 2 or 3 journals are increasing their share of both publishers and journals.

The average number of journals per publisher has also increased over the period studied, from 1.535 to 1.608. This growth over a bit more than 19 months translates to an annual compound growth of 2.9 percent. At this rate it will take about 32 years to reach an average of 2.64, which was the TA average I found in my earlier article (Frantsvåg 2010).

How has this growth come by?

The growth in the number of journals, in the number of publishers and in the average number of journals per publisher consists of a number of components:

- Journals and publishers that do not exist anymore

- New journals and publishers
- Existing journals that have moved to new or other existing publishers
- New journals with existing publishers

The table below shows something of how publishers have changed sizes or been started between May 2009 and December 2010. The table only shows journals with publishers that existed in December 2010.

Table 4 Number of publishers by size (number of journals published) Numbers in italics indicate publishers with no change in their size

	Size May '09																											
Size Dec '10	1	2	3	4	5	6	7	8	9	10	11	12	14	16	20	22	26	28	36	61	62	99	160	183	New	Total		
1	2039	9																								1117	3165	
2	77	107	3																							61	248	
3	10	13	19	4																						20	66	
4	4	6	8	11			1																			3	33	
5	4	2	1	3	6																					9	25	
6		1		2	2	4	2																			2	13	
7		2	1		3		2		1	1																1	11	
8					1	1	2	3																		2	9	
9					1	1	1		1																	1	5	
10		1			1	2																				1	5	
11				1	1		1	2				1														1	7	
12			1							2		3														1	7	
13										1	1		1	1														4
14										1	1	1	1															4
15				1									1													1	3	
16													1															1
17												1														1	2	
18																	1											1
19																										1	1	
20						1							1													1	3	
26																		1										1
27																										1	1	
31																			1									1
32																1												1
41																				1								1
60																						1						1
63															1													1
83																					1							1
155																							1					1
204																									1			1
208																								1				1
Total	2134	141	33	22	15	9	9	5	2	5	2	6	5	1	2	1	1	1	1	1	1	1	1	1	1	1	1224	3624

We see that publishers that were in business in May 2009 generally have maintained their size or grown somewhat, while a large number of new publishers have joined the DOAJ. (This does not necessarily mean they are new, but we have no knowledge of this and treat them as new in this context.) Most new publishers are small, even if a number of them publish 5 or more journals by December 2010.

The table below shows the effect on journal numbers from the table above, where change in size is multiplied by the number of publishers:

Table 5 Change in publisher size - number of journals

Size Dec '10	Size May 09																								New	Total		
	1	2	3	4	5	6	7	8	9	10	11	12	14	16	20	22	26	28	36	61	62	99	160	183				
1		9																								1,117	1,108	
2	77		3																							122	196	
3	20	13		4																						60	89	
4	12	12	8				3																			12	41	
5	16	6	2	3																						45	72	
6		4		4	2		2																			12	20	
7		10	4		6				2	3																7	22	
8					3	2	2																			16	23	
9					4	3	2																			9	18	
10		8			5	8																				10	31	
11				7	6		4	6				1														11	33	
12			9							4																12	25	
13										3	2		1	3														1
14										4	3	2																9
15				11									1													15	27	
16													2															2
17												5														17	22	
18																	4											4
19																										19	19	
20						14							6													20	40	
26																												
27																										27	27	
31																			3									3
32																				12								12
41																				5								5
60																						2						2
63																		43										43
83																					22							22
155																							56					56
204																										21		21
208																										48		48
Total	125	44	20	21	26	27	3	6	2	8	5	6	8	3	55	4		3	5	22	2	56	48	21	1,531	2,029		

We see from the “New” column that about three quarters of the growth is attributed to new publishers. A few publishers growing from medium size also adds significant numbers, at the same time there is quite a number of small publishers growing by a small number of journals. Publishers that have grown from 1 journal in May 2009 to 2-5 journals in December 2010 has created a growth of 125 journals, this is the largest growth apart from the new publishers. Red numbers, indicating reduced size, shows that publishers also lose journals – either by closing down the journals or by the journals changing publishers.

The total growth in this last table is 2029 journals. However, the DOAJ only has grown by 1,750 journals, from 4,079 to 5,829, in the period. The excess growth of 279 journals is offset by 279 journals published in May 2009 by 258 publishers that are no longer listed in DOAJ in December 2010. 248 of these publishers published 1 journal each, 8 published 2 journals each, one published 5 and one 10 journals – 279 in all.

We can also note that 159 journals published in May 2009 are no more listed in DOAJ in December 2010. 111 of these journals were published by single journal publishers, of which 104 no longer are listed. Other journals were published by publishers that still are listed, e.g. BioMed Central who has 11 journals that were published in May 2009 but seem to have been discontinued by December 2010.

We also note that 173 journals that were published in May 2009 and still were published in December 2010 were published in May 2009 by publishers that were no longer listed in December 2010. Obviously, some of these publishers have merely changed names, but in many instances journals have moved to other publishers.

Conclusion

There is obviously change in the landscape of OA publishing. There is growth both by new entrants – journals and publishers – and through existing publishers expanding either by publishing new journals or by taking over journals from other publishers. The growth in the average number of journals per publisher indicates some degree of consolidation.

However, the current rate of consolidation and growth of average publisher size is not sufficient to ensure a viable OA publishing industry. Shall change come about at a significant rate, institutions hosting, owning or financing OA journals need to create larger publishers. There probably are limits to how large publishers need to be in order to realize economies of scale, so there should be no need to create OA publisher mastodons. What is sorely needed, is medium-sized OA publishers that could be large enough to have the necessary competence and realize economies of scale, without becoming too large compared to, and too distant from, the individual journals and without being big enough to be able to exert influence over the OA publishing market.

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