



# OPEN ACCESS PUBLISHING - MODELS AND ATTRIBUTES

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## Abstract

The SOAP (Study of Open Access Publishing) project has compiled data on the present *offer* for open access publishing in online peer-reviewed journals. Starting from the Directory of Open Access Journals, several sources of data are considered, including inspection of journal web site and direct inquiries within the publishing industry. Several results are derived and discussed, together with their correlations: the number of open access journals and articles; their subject area; the starting date of open access journals; the size and business models of open access publishers; the licensing models; the presence of an impact factor; the uptake of hybrid open access. In addition, a number of qualitative features of open access publishing, relevant to understand the present landscape, are described.



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## EXECUTIVE SUMMARY

In its first phase, the SOAP project describes the *offer* of current solutions in open access publishing. Two main strands of work are followed. The first strand starts from information available in the Directory of Open Access Journals (DOAJ), complemented by data from other sources, including an inspection of web sites of publishers and journals. It provides a comprehensive quantitative description of the landscape of existing open access journals and publishers, capturing their similarities and differences, volume of publication and business models, evolution with time and subject area. The second strand of work assesses the market penetration of the hybrid open access publishing model, based on information provided by the largest publishing enterprises which offer this model.

The main findings of this first phase of the SOAP project are summarised as follows:

- There are at least 120,000 open access articles published each year in fully open access journals or hybrid journals.
- Most publishers (~90%) publish less than 100 articles/year and altogether contribute one third of the total number of articles/year. The remaining two thirds of articles/year are published by the remaining 10% of publishers.
- Fourteen “large publishers” can be identified, with more than 50 journals or more than 1,000 articles/year. These account for 30% of the total yearly output, are predominantly active in the STM subject fields and are more likely to be commercial companies rather than not-for-profit.
- The distribution of open access journals over disciplines is rather even. Grouped together, however, two thirds of the journals and three quarters of the articles are in STM.
- Each year of the last decade saw the launch of 200-300 new open access journals, mostly in the life sciences and medicine, by large publishers. Many journals in Chemistry, Physics and Technology, mostly from the other publishers have earlier starting dates.
- “Large publishers” are more likely to rely on article processing charges (as well as membership fees and advertising) whereas other publishers base their business more on sponsorship and subscriptions, in addition to article processing charges, mostly present in their STM rather than SSH titles.
- Both large and smaller publishers are equally likely to have journals with an impact factor.
- Large publishers mostly use a version of Creative Commons licensing while several smaller publishers request the transfer of copyright to the publisher.

Twelve large publishers with a total of about 8,100 journals, mostly in STM, offer a hybrid option for 25% of their titles. The uptake of this offer is about 2%.

## 1. INTRODUCTION

The SOAP project has as its aim to compare and contrast the offer and demand for open access publishing. The project is financed by the European Commission under the Seventh Framework Programme, and runs from March 2009 to February 2011. The project is co-ordinated by CERN, the European Organisation for Nuclear Research, and is a partnership of publishers (Springer, Sage, BioMed Central), libraries (the Max Planck Digital Library of the Max Planck Society) and funding agencies (the UK Science and Technology Facilities Council). It concentrates on existing solutions and business models for open access articles published online in peer-reviewed journals. The project has three main phases, each corresponding to a work-package. The first phase (WP2) studies and analyses the currently existing open access publishing solutions and the corresponding business models. The aim is to get a better insight into these solutions, to try to measure and assess the success of the various models and to analyse their differences and similarities between the models. In short, WP2 presents the offer for open access publishing today. The second phase (WP3) aims to assess the demand for open access publishing, by a large-scale survey of scientists across disciplines and around the world. The third and last phase (WP4) will compare the offer and the demand, further analysing the opportunities for open access publishing.

This document is the deliverable D2.1 of the SOAP project. It summarises the findings of WP2, led by the Max Planck Digital Library with a collaborative effort of all project partners. A shorter summary, deliverable D2.2, also exists.

WP2 had two main strands of work, described in this document. The first is to assess the offer of open access journals, the second to understand the success of the so-called hybrid journals.

The DOAJ (Directory of Open Access Journals) has been used as a starting point for the analysis of the offer of open access journals. Additional information on their publishing success, business model, copyright and licensing policies was collected from other sources, often requiring manual inspection of the web sites of thousands of journals. Data from all these sources was combined into one master database and an in depth analysis was performed. The results of this quantitative analysis form a major part of this report.

A separate analysis was made for so called hybrid journals, both listing and studying the offer and assessing the overall market penetration of this model, thanks to the collaboration of several publishing enterprises who have shared their experience.

Over the several months taken by this study, a number of additional, remarkable, features of open access publishing were considered important enough to record and capture, and are summarised in a third, qualitative, part of this report.

These three approaches to a study of open access publishing, combined into one report, provide a solid, fact-based, impartial basis for the work of the SOAP project. Most importantly, they are intended to provide evidence for the public debates on open access and a sustainable future of scholarly communication. We hope all stakeholders in this debate will benefit from our efforts: the European Commission and other funding agencies, publishers, libraries and, last but not least, researchers who “vote with their articles”.

## 2. BACKGROUND

This short chapter provides some background information regarding the scope of this study and lays the groundwork of concepts and definitions used throughout this report. It also presents a description of the structure of this document.

Open access literature is usually defined as scientific results published online, free of charge for all readers. Such literature may be further redistributed and reused for research, education and other purposes. This study concentrates on articles available through open access in peer reviewed journals, a form of open access also known as “gold open access”<sup>1</sup>. This study does not touch on “green” open access or self-archiving of scientific results which is beyond the mandate of SOAP and is the subject of several other initiatives. In the first part of our study we concentrate on journals which are “fully” open access, that is, the entire content is made available to the readers free of charge. Another form of open access is the so called hybrid model, where journals which are not entirely open access offer authors the option to publish their article with open access against payment of a fee. This type of open access is often referred to as “optional” access as it offers open access at the article level, while the publishing of the journal per se is basically financed by subscriptions. The second part of this study looks at this model. There are other types of partial open access hybrid models, such as delayed or retrospective access, but these were not investigated.

Business models for open access publishing have been in the spotlight of scholarly publishing for many years. The notion of a business model for open access publishing carries a different weight for publishers, researchers and libraries. It commonly includes aspects such as “client” segment (author, reader, funder, library, etc.), income sources (subscription, advertisement, grant, etc.), structure/hierarchies related to meeting costs and value proposition for these different “clients”. The indicators for assessing the business models from the various standpoints are many<sup>2</sup>. This study focuses on the aspect of the “income sources” as one of the key differences from the traditional “pay for access” models. In particular, the following sources are identified and their market penetration is studied in the following:

- **Article processing charges:** Journals charge a fee to the authors at the article level. Charges can vary between journals, disciplines and processing requirements. They can be per accepted article, per submitted manuscript (whether accepted or rejected) or at a page charge, sometimes in addition to a flat rate. Examples: Biomed Central, Public Library of Science, Hindawi Publishing Corporation, Medknow Publications, Co-Action Publishing, Copernicus.
- **Institutional membership scheme:** Journals offer a membership scheme often paid by the institution of the author. The funds may come from library budgets, research grants (whether or not these have specific funds for the purpose) or some centrally managed funds. Examples: Biomed Central, Hindawi Publishing Corporation, American Society for Neurochemistry in collaboration with Portland Press.

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1 <http://www.earlham.edu/~peters/fos/boaifaq.htm#openaccess>

2 Some examples include the following reports from various professional bodies:

SPARC/ARL, <http://www.arl.org/resources/pubs/rli/archive/rli266.shtm> and [http://www.arl.org/sparc/bm~doc/incomemodels\\_v1.pdf](http://www.arl.org/sparc/bm~doc/incomemodels_v1.pdf):

ALPSP, [http://www.alpsp.org/ngen\\_public/article.asp?id=200&did=47&aid=270&st=&oid=-1](http://www.alpsp.org/ngen_public/article.asp?id=200&did=47&aid=270&st=&oid=-1);

STM, [http://www.stm-assoc.org/2009\\_10\\_13\\_MWC\\_STM\\_Report.pdf?PHPSESSID=dcd8480886aa0a262a4751e315910863](http://www.stm-assoc.org/2009_10_13_MWC_STM_Report.pdf?PHPSESSID=dcd8480886aa0a262a4751e315910863);

- **Community Publishing:** Journals are published through a community effort, where volunteer labour (of individuals or institutions) offsets parts of the costs. This approach is often deeply intertwined with some forms of institutional subsidy. Example: Bioline International.
- **Advertising or sponsorship supported efforts:** Journals use advertising or sponsorship to cover all or part of their costs. Example: the launch period of the Public Library of Science.
- **Institutional subsidy:** Institutions subsidise the journal publishing, through university presses, with publishing activities within libraries or at the department levels. Another type is a publisher receiving subsidy from institutions mostly concerned with the subject of the journals. Example: Living Reviews, Physical Review Special Topics Accelerators and Beams.
- **Hard copy sales:** Sales of print copies of the entire journals or individual articles level is used to cover part of the publishing costs and can be tailored from article, issue, volumes. Example: PLoS Biology and PLoS Medicine.
- **Collaborative purchasing models/cooperative initiatives:** Consortia agreements are established to cover publishers' costs in exchange for making the content of journals full open access. Examples: American Society for Neurochemistry in collaboration with Portland Press, or the proposed SCOAP<sup>3</sup>.
- **Cross-Financing.** Publishers cover some or all the costs for open access journals from revenues from their other subscription journals.

The structure of this document is as follows: chapter 3 presents a detailed study of the offer of open access journals, starting from the DOAJ and then presenting additional information in an aggregate study of publisher size and nature, journal field, article volume, business model, copyright and licensing model. Chapter 4 studies the offer and assesses the market penetration of the hybrid model. Chapter 5 offers more qualitative details of the present open access publishing landscape which emerged during this study: the profile of the largest publishing operations; notable models of collaboration of publishers and learned societies; institutional open access publishing; alternative business models as the Max Planck Digital Library licensing and open access agreements and the SCOAP<sup>3</sup> initiative. Reflections on the different licensing alternatives are also presented.

### 3. QUANTITATIVE ANALYSIS OF OPEN ACCESS JOURNALS

Directories of scholarly journals have long been a means to increase the visibility and use of journals, and are a precious tool to navigate the bewildering variety. The reference directory for open access journals is the DOAJ<sup>3</sup>. It was set up in 2003 by the Lund University Libraries with the support of the Open Society Institute. It lists more than 4,000 Open Access journals published by over 2,000 publishers, often via different platforms and in different languages. The metadata describing the journals, and more recently articles as well, are provided by publishers and then edited by DOAJ staff to ensure compliancy to international standards, e.g. subjects are matched to relevant Library of Congress Subject Headings and ISSN numbers are cross checked at the official ISSN database<sup>4</sup>.

The DOAJ was selected as the primary source of data for this study owing to the following criteria:

- Reputation and visibility as the most comprehensive registry of open access scholarly journals.
- Quality control of open access journals as being either peer-reviewed or having other forms of editorial assurance<sup>5</sup>.
- Availability of an initial sample of descriptive metadata on publisher and journal information with ease of access.
- Permission to locally ingest and further enrich the data.

#### 3.1 METHODOLOGY

##### 3.1.1 The DOAJ data and further enrichment

A data file of journal-level metadata was downloaded from the DOAJ website in the form of a spreadsheet during July 2009. An example of a typical DOAJ Open Archives Initiative (OAI) record<sup>6</sup>, as imported, is shown in Figure 1.

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<sup>3</sup> <http://www.doaj.org/doaj?func=suggest>.

<sup>4</sup> <http://www.issn.org>.

<sup>5</sup> Description of the DOAJ quality control criteria: <http://www.doaj.org/doaj?func=loadTempl&templ=about#criteria>

<sup>6</sup> [http://www.doaj.org/doaj?func=loadTempl&templ=example\\_oai\\_record](http://www.doaj.org/doaj?func=loadTempl&templ=example_oai_record) (accessed February 2010)

```

<record>
  <header>
    <identifier>oai:doaj:1477-7843</identifier>
    <datestamp>2004-01-22T00:00:00Z</datestamp>
  </header>
  <metadata>
    <oai_dc:dc xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xmlns:dc="http://purl.org/dc/elements/1.1/"
      xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
      xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
      http://www.openarchives.org/OAI/2.0/oai_dc.xsd">

      <dc:title>discourse analysis online</dc:title>
      <dc:identifier>http://extra.shu.ac.uk/daol/index.html</dc:identifier>
      <dc:identifier>issn: 1477-7843</dc:identifier>
      <dc:publisher>DAOL Team at Sheffield Hallam University</dc:publisher>
      <dc:date>2003</dc:date>
      <dc:language>English</dc:language>
      <dc:subject>social science</dc:subject>
      <dc:subject>psychology</dc:subject>
      <dc:subject>communication</dc:subject>
      <dc:subject>mass media</dc:subject>
      <dc:subject>discourse analysis</dc:subject>
      <dc:subject>cultural studies</dc:subject>
      <dc:subject>linguistics</dc:subject>
      <dc:subject>DoajSubjectTerm: Social Sciences</dc:subject>
      <dc:subject>LCC: H1-99</dc:subject>
      <dc:subject>DoajSubjectTerm: Media and communication</dc:subject>
      <dc:subject>LCC: PN4699-5650</dc:subject>
      <dc:subject>LCC: P87-96</dc:subject>
    </oai_dc:dc>
  </metadata>
</record>

```

**Figure 1: Example of DOAJ OAI record**

At the time of import, a total of 4,032 unique journal records were contained in the DOAJ data file. The data retrieved were parsed and assigned to a relational database structure using PHP and SQL. Final entities comprised what are later referred to as: "journal title", "publisher" and "subject heading".

The data was then enriched with additional information such as the number of published articles per year, the publication end date and the journal impact factor. This information was extracted from the following data sources, through an ISSN matching at the journal level with the DOAJ record:

- The Electronic Journals Library (EZB)<sup>7</sup>; data as of year 2009.
- SCOPUS<sup>8</sup>; data as of year 2009.
- Journal Citation Reports (ISI-JCR)<sup>9</sup>; data for year 2008; retrieved in 2009.
- SCImago Journal & Country Rank (SCImago)<sup>10</sup>; data for year 2008; retrieved in 2009.

### 3.1.2 Manual collection of additional information

Additional information on the journals and publishers was manually collected between September 2009 and January 2010, with some subsequent double-checking and

7 <http://rzblx1.uni-regensburg.de>

8 <http://www.scopus.com>

9 [http://thomsonreuters.com/products\\_services/science/science\\_products/a-z/journal\\_citation\\_reports](http://thomsonreuters.com/products_services/science/science_products/a-z/journal_citation_reports)

10 <http://www.scimagojr.com/journalrank.php>

corrections during the analysis phase. The information was investigated and collected from the websites of the journals and publishers.

The collected data was entered via a PHP-based web interface into a MySQL database. The data collection and processing approach was based on the SESAM framework, an administrative support system developed by MPDL allowing for distributed and personalized data entry.

The selection of the DOAJ sample for further processing was organized as follows. First, titles were grouped by large publisher, major aggregation services (J-Stage, Redalyc, SciELO), or journals which have been awarded an impact factor. These groups were assigned to a specific SOAP project partner for the data collection and entry. In addition, BioMed Central provided the data for its own journal operations and SAGE for Hindawi Publishing Corporation. In subsequent batches, journals were assigned as a random selection to different project partners, according to available effort.

### 3.1.3 Field definitions and sources

Table 1 gives an overview of the individual fields used in the study, together with the source of data. A checkmark means that the information was found in the DOAJ, in which case the corresponding field is indicated. The table indicates information manually collected from the journal web pages or provided by one of the project partners. The second column denotes the individual fields of the DOAJ OAI record (see Figure 1). The last column indicates alternative sources of information which were automatically harvested.

SOAP database	DOAJ data file fields	DOAJ	manually collected	matched in from other sources
journal information				
title	<dc:title>	√		
ISSN	<identifier> ISSN	√		
homepage	<dc:identifier> URL	√		
start date	<dc:date>	√		
end date	N/A		√	EZB
language	<dc:language>	√		
subject discipline	<dc:subject>	√		
number of articles per year	N/A		√	ISI-JCR, SCImago
income sources	N/A		√	
copyright / licensing options	N/A		√	
publisher information				
name	<dc:publisher>	√		
homepage	N/A		√	
type	N/A		√	
commercial interest	N/A		√	

Table 1: Overview of information used in this study and its origin

Two main categories of information were collected: at a journal level and at a publisher level. A breakdown of the fields analysed in each record and their provenance is presented in the following.

#### Journal information (and source)

- *Title (DOAJ)*. Title of the journal as recorded in the DOAJ.
- *ISSN (DOAJ)*. ISSN of the journal as recorded in the DOAJ. The DOAJ does not differentiate between the ISSN for the print and electronic versions of the journal. Unfortunately this implies that it was not possible to trace in the DOAJ journals which are a continuation of a previous title.



- *Homepage (DOAJ, with some modification)*. URL as recorded in the DOAJ. In some cases these were manually corrected.
- *Start date (DOAJ)*. Year of publication of the earliest available open access online content. Owing to this particular convention used by the DOAJ, the year of publication refers not only to new open access journals, but also to journals that have started making archive content available through open access.
- *End date (automatically matched or manually collected)*. Year when journal ceased as open access publication, either altogether or in its previous form (e.g. name change, title split, title transfer). No end date for the publication of the journal is given in the DOAJ. Whenever a journal could be identified by its ISSN in the EZB, and the latter carried information on its end date information, then this information was matched in with the purpose of identifying discontinued journal titles. Manual verification was necessary for a large number of cases.
- *Language (DOAJ, with some manual modification)*. The language(s) of the journal. Multiple entries exist in the DOAJ. For some journals the putative publication in English language was manually verified.
- *Subject discipline (DOAJ, with some manual modification)*. There are 17 subject categories listed in the DOAJ, which are aggregated and derived from 111 subject terms. These are initially provided by the journal publishers and DOAJ staff then assign subject headings matching Library of Congress Subject Headings.

For the purposes of this study, subject domains have been aggregated in six major categories as presented in Table 2.

<b>code</b>	<b>SOAP subject category</b>	<b>DOAJ subject categories</b>
cpt	Chemistry, Physics and Technology	Chemistry
cpt		Technology and Engineering
cpt		Mathematics and Statistics
cpt		Physics and Astronomy
bio	Biology and Life Sciences	Agriculture and Food Sciences
bio		Biology and Life Sciences
bio		Earth and Environmental Sciences
med	Medicine and Health Sciences	Health Sciences
soc	Social Sciences	Business and Economics
soc		Law and Political Science
soc		Social Sciences
hum	Humanities	Arts and Architecture
hum		History and Archaeology
hum		Languages and Literatures
hum		Philosophy and Religion
gen	General Works	General Works
gen		Science General

**Table 2: Overview of subject categories used in this study, as derived from the DOAJ**

- *Number of Articles per year (automatically matched and manually collected)*. Number of articles per journal and year. This information was extracted from ISI-JCR and SCImago, starting from the ISSN of the journal as:

- *ISI-JCR: research articles and reviews ("citable items"); excluded are editorials, news items, meeting abstracts and communication; data for 2008*
- *SCImago: articles, reviews and conference papers; data for 2007*

If not available from either of these sources the number of articles was collected manually from the journal websites. This extraction was performed for the year 2008 or, in case this was not conclusive enough for the frequency of issues or articles, for the year 2007. Example of articles which were counted are: research articles, reviews and conference papers. Examples of items that were not counted are: editorials, errata, communication, news items. However, given the different sources and the fact that article types vary in subject domains these data are affected by systematic uncertainties of several percentage points.

SOAP project partners, BioMed Central and SAGE UK (on behalf of Hindawi Publishing Corporation) directly provided the number of articles for the journals they publish.

- *Income sources (manually collected)*. A classification scheme for the income sources of the journal was developed. It comprises the following categories:
  - (a) article processing charge: a charge applied for the processing of an article. It might be requested at various stages of the publishing process, e.g. at submission or on acceptance. There was no differentiation for these variations.
  - (b) membership fee: journal income via a membership option.
  - (c) advertisement: journal income through accepting and hosting advertisements.
  - (d) sponsorship: journal income through sponsorship, by single or multiple institutions/organisations or at an individual level.
  - (e) subsidy: financial assistance by an organisation hosting the publishing activity or by a funding agency concerned by assuring that the publishing activity remains ongoing.
  - (f) subscription: income from subscription to the print version of the journal.
  - (g) hard copy: income from hard copy sales, either individual volumes or the archives of the journal with some given periodicity.
  - (h) consortium: income from the fact the journal was offered as part of a library consortium agreement.
  - (x) other: groups some of the other sources for income such as: article page charge, colour page charge, off-prints and reprints sales, print on demand, income via conference fees, donations, services to authors (copy-editing, proof reading, etc.), sales in other formats than hard-copy (e.g. CD-ROM with digital archives).
- *Copyright / licensing options (manually collected)*. The information about the copyright/licensing options of the journal was collected manually from the journal websites and assigned to one of three categories:
  - (au) author retains copyright: The journal/publisher explicitly mentions that the author retains the copyright without any reference to the type of

license under which the content of the journal is made available to the readers.

- (co) copyright transfer: The journal/publisher requests the author to transfer the copyright to the journal/publisher or requires a perpetual exclusive license to publish to be granted.
- (cc) Creative Commons license<sup>11</sup>: This option was selected in the case that the journal/publisher explicitly adopts a Creative Commons license. An attempt was made to identify the particular licence with the following tags
  - “cc-by-nc-nd” (Attribution Non-commercial No Derivatives)
  - “cc-by-nc-sa” (Attribution Non-commercial Share Alike)
  - “cc-by-nc” (Attribution Non-commercial)
  - “cc-by-nd” (Attribution No Derivatives)
  - “cc-by-sa”(Attribution Share Alike)
  - “cc-by” (Attribution)

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<sup>11</sup> <http://creativecommons.org/>

### **Publisher information (and source)**

- *Name (DOAJ, with some modification)*. Publisher names are not normalized in the DOAJ records and often entered at the journal level. All reasonable automatic and manual efforts were taken to normalise this field so to achieve a reasonable grouping of results by publishers.
- *Homepage (manually collected)*. The URLs of the publisher homepages were identified and entered manually into the database, in order to facilitate further data extraction.
- *Type (manually collected)*. An attempt was made to classify publisher in one of the following classes:
  - Publishing house: A formal organisation mostly concerned with publishing. It may either be commercial or non-profit.
  - Learned society: An organisation, possibly a membership association, which mostly aims to promote scholarly, academic or research goals and has a publishing activity. Unions and federations were not assigned to this category.
  - “Miscellaneous”: Academic institutions (universities and colleges), governmental and international organisations, foundations and other research institutions.
- *Commercial interest (manually collected)*. The commercial interest of publisher categorised as:
  - Commercial organization: Designating or relating to an organization operated to make a profit.
  - Non profit organization: An organization, corporation etc., which does not operate for the purpose of making a profit.

#### **3.1.4 Selection for the study sample**

The focus during the data collection and processing was limited to journals which publish in the English language. This exclusion criterion was applied also to journals which contain only some limited information in English (e.g. abstracts) but are otherwise published in another language.

Journals which have a) stopped publishing articles, b) stopped publishing open access and c) stopped publishing in their previous form (e.g. name change, title split, title transfer (marked during the data collection as “archival”) have also been excluded from this study.

#### **3.1.5 Final data processing and statistical analysis**

Data matrices at publisher and journal level as well as cross tabulation were produced via SQL statements. Further statistical processing and visualization was accomplished with the aid of the SPSS statistical package version 18 (2009).

## **3.2 RESULTS**

### **3.2.1 The study sample**

The DOAJ data (as of July 2009) comprised 4,032 unique journals from 2,588 unique publishers.

Amongst these, 700 journals are not tagged as in "English" in the DOAJ language field and a further 288 journals were manually classified as not in English. These 988 journals (25%) are excluded from further analysis. Amongst the remaining English journals there are 206 journals (7%) having ceased publication (either due to title change

or transfer or final end of open access conditions) by the year 2009. These are also excluded from the final sample.

The final sample comprises 2,838 journals by 1,809 publishers.

The most populated subject domains within the complete DOAJ data sample of 4,032 journals are the medical sciences and the social sciences (26% and 27% respectively), followed by journals from the science and technology fields. Only 12% of the journals are in the humanities. These figures are presented in Table 3. The reduced sample of 2,838 journals considered in this study has a different composition. Many more titles were eliminated from the subsamples of social sciences and humanities compared to the STM domains. This is due mainly to non-English language journals but also to a relatively higher fraction of ceased journals. This sample is also presented in Table 3.

<b>subject</b>	<b>DOAJ journals</b>		<b>non-English journals</b>		<b>ceased English journals</b>		<b>selected journals</b>	
cpt	649	16 %	68	7 %	32	16 %	549	19 %
bio	699	17 %	127	13 %	39	19 %	533	19 %
med	1,073	27 %	228	23 %	39	19 %	806	28 %
soc	1,032	26 %	366	37 %	55	27 %	611	22 %
hum	490	12 %	178	18 %	36	17 %	276	10 %
gen	89	2 %	21	2 %	5	2 %	63	2 %
<b>total</b>	<b>4,032</b>		<b>988</b>		<b>206</b>		<b>2,838</b>	

**Table 3: Distribution of journals over subjects**

The original DOAJ sample and the final sample retained for the analysis are presented. Journals excluded from the study as not in the English language or having ceased (open access) publication are also indicated.

The number of articles per journal and year (2008 or 2007) was successfully measured for 2,711 journals (96%) of the selected sample and sums up to a total of 116,883 articles.

We identified 14 large publishers (described in the following) with 616 journals representing 36,096 articles per year. For those, information on copyright and income sources were retrieved for the vast majority of journals.

For the 1,795 other publishers with 2,222 journals, representing 80,787 articles per year, it was possible to retrieve copyright information for 1,392 journals (63%) and income information for 1,338 journals (60%).

### 3.2.2 Publisher and journal sizes

The distribution of journals per publisher is highly skewed, as presented in Table 4. The vast majority of the publishers publish only one journal, with only 30 publishers publishing more than 10 journals. Five publishers publish more than 50 journals each, altogether representing 14% of all DOAJ journals. A similar frequency distribution holds for the journals retained for the study. The five largest publishers account for 19% of these journals corresponding to 13% of the total number of estimated articles.

size of publisher by number of DOAJ journals	DOAJ publishers		DOAJ journals	
1	2,271	88 %	2,271	56 %
2 to 9	287	11 %	849	21 %
10 to 49	25	1 %	358	9 %
≥ 50	5	0 %	554	14 %
Total	2,588		4,032	

The DOAJ journals columns list the number of journals (and their relative value) associated with the different publishers by size. For example, there are 2,271 journals published by 2,271 publishers, 849 journals associated with 287 publishers that publish between 2-9 journals, 358 journals associated with 25 publishers that publish between 10-49 journals and 554 journals that are published by 5 publishers.

size of publisher by number of selected journals	publishers		journals		estimated articles per year	
1	1,621	90 %	1,621	57 %	63,887	55 %
2 to 9	171	9 %	491	17 %	25,442	22 %
10 to 49	12	1 %	190	7 %	12,623	11 %
≥ 50	5	0 %	536	19 %	14,931	13 %
Total	1,809		2,838		116,883	

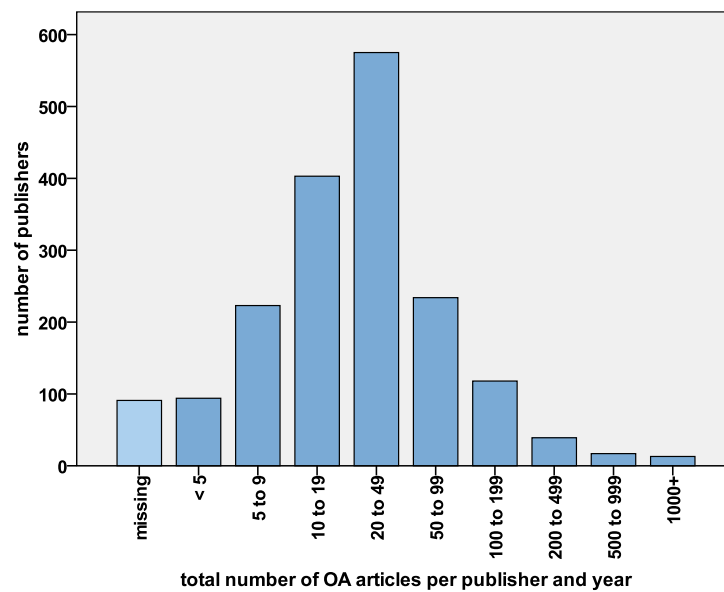
**Table 4: “Size” of publishers by number of open access journals. a) for all DOAJ records b) for records selected for the SOAP study**

The journals column lists the number of journals (and their relative value) associated with the different publishers by size for the selected DOAJ sample that was analysed in this study.

The total number of articles per publisher and year is also considerably skewed as presented in Table 4 and Table 5. Most of the publishers selected (~90%) publish less than 100 articles per year and altogether contribute approximately one third of the total articles estimated. The remaining two thirds of the articles are published by only 10% of the publishers selected. Only 13 publishers (1%) publish more than 1,000 articles per year and account for 30% of the annual articles appearing in the journals selected for this study. These numbers are also summarised graphically in Figure 2.

size of publisher by number of articles	publishers		selected journals		estimated articles per year	
missing	91	5 %	94	3 %		
0 to 9	318	18 %	326	11 %	1,852	2 %
10 to 99	1,212	67 %	1,357	48 %	40,004	34 %
100 to 999	175	10 %	507	18 %	39,588	34 %
≥ 1000	13	1 %	554	20 %	35,439	30 %
Total	1,809		2,838		116,883	

**Table 5: “Size” of publishers by number of articles per year**



**Figure 2: "Size" of publishers by number of articles per year**

The skewness of this distribution suggests it is valid to aggregate publishers into two categories: large publishers and other publishers. A publisher is a "large publisher" if either of two criteria is fulfilled: they published more than 50 journals or more than 1,000 articles in 2007 or 2008. These criteria selected 14 large publishers, which are listed in Table 6. A more detailed profile of each publisher is given in chapter 5.

Due to major differences between the 14 large publishers and the rest, with respect to data availability for the variables assessed within this study, it is not appropriate to sum up frequencies for both groups without some weighting for the respective completeness. Also in the light of the highly skewed distributions these two groups may be analysed together only with great caution. Results are therefore presented in the following separately for the large publishers and the other publishers.

shorthand	full name	number of journals	articles per year
bmc	BioMed Central	176	8,993
iucr	International Union of Crystallography	1	5,165
plos	Public Library of Science	7	4,368
ansi	Asian Network for Scientific Information	13	2,514
hindawi	Hindawi Publishing Corporation	85	2,044
copernicus	Copernicus Publications	18	2,012
osa	Optical Society of America	1	1,961
waset	World Academy of Science, Engineering and Technology	18	1,960
bentham	Bentham Open	154	1,663
medknow	Medknow Publications	59	1,574
ias	Indian Academy of Sciences	10	1,152
oup	Oxford University Press	2	1,032
acadj	Academic Journals	10	1,001
ispub	Internet Scientific Publications	62	657

**Table 6: The 14 large publishers identified in this study, ordered by number of articles per year**

### 3.2.3 Subject Categories

Table 7 presents the distribution of publishers, journals and articles by subject categories, while Figure 3 displays the journal and article distributions. With the exception of general, multidisciplinary, titles, the distribution is even across the categories used in this study. Grouped together, the STM fields make up two thirds of the titles. Their share is even higher at the article level. More than three quarters of the articles are assigned to these three subject categories. The social sciences and humanities account for 32% of the journals and 16% of the articles.

<b>subject category</b>	<b>publishers *</b>		<b>journals</b>		<b>articles</b>	
cpt	360	20 %	549	19 %	33,158	28 %
bio	355	20 %	533	19 %	24,767	21 %
med	406	22 %	806	28 %	32,879	28 %
soc	533	29 %	611	22 %	13,506	12 %
hum	258	14 %	276	10 %	5,030	4 %
gen	63	3 %	63	2 %	7,543	6 %
<b>Total</b>	<b>1,809</b>		<b>2,838</b>		<b>116,883</b>	

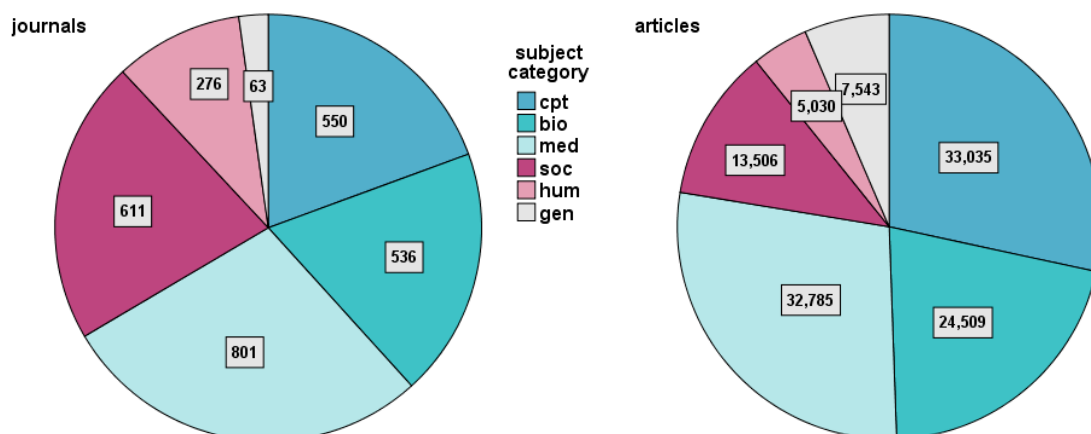
**Table 7: Distribution of publishers, journals and articles by subject category**

\*The same publisher may publish journals in more than one subject areas. Therefore the publisher figures in this table represent multiple entries.



journals

articles



**Figure 3: Distribution by subject category of a) journals and b) articles**

As Table 8 shows, there are generally higher numbers of articles per journal in the STM fields than in the social sciences and humanities. The physical and technical sciences are very well represented, with 6 out of the 10 largest journals.

subject category	percentiles for number of articles per journal & year					
	5%	25%	median	75%	95%	max
cpt	4	12	25	48	202	5,165
bio	4	12	26	55	159	504
med	3	12	26	53	138	3,218
soc	4	9	15	26	62	854
hum	3	8	14	22	44	557
gen	4	9	19	34	330	652

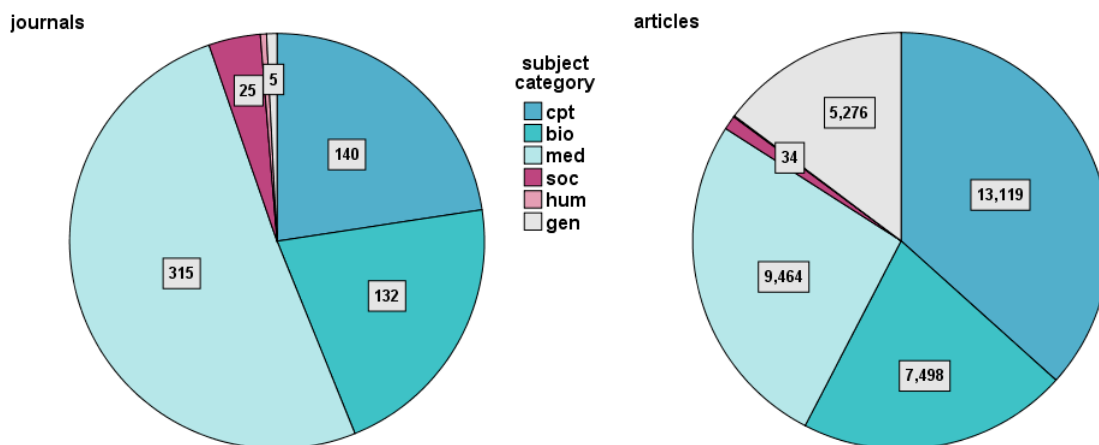
**Table 8: Percentiles for number of articles per journal and year by subject category**

The distribution of publisher group and category is shown in Table 9 and Figure 4. There is a significant relation between the publisher group and the subject category. The vast majority (95%) of the journals of the 14 large publishers are classified in the STM fields (cpt, bio, med) whereas journals from other publishers are distributed more evenly.

publisher code	journals	journals in subject category						
		cpt	bio	med	soc	hum	gen	
acadj	10	10 %	50 %	-	30 %	-	10 %	
ansi	13	8 %	69 %	15 %	-	-	8 %	
bentham	154	29 %	24 %	36 %	10 %	1 %	1 %	
bmc	176	2 %	25 %	72 %	1 %	1 %	-	
copernicus	18	22 %	72 %	-	6 %	-	-	
hindawi	85	71 %	6 %	21 %	2 %	-	-	
ias	10	70 %	30 %	-	-	-	-	
ispub	62	-	5 %	95 %	-	-	-	
iucr	1	100 %	-	-	-	-	-	
medknow	59	3 %	5 %	90 %	2 %	-	-	
osa	1	100 %	-	-	-	-	-	
oup	2	50 %	50 %	-	-	-	-	
plos	7	-	43 %	43 %	-	-	14 %	
waset	18	78 %	-	6 %	11 %	-	6 %	
all large publishers (n = 14)		616	23 %	20 %	52 %	4 %	<1 %	1 %
all other publishers (n = 1,795)		2,222	18 %	18 %	22 %	26 %	12 %	3 %

publisher code	articles	articles in subject category						
		cpt	bio	med	soc	hum	gen	
all large publishers (n = 14)		36,096	37 %	21 %	26 %	1 %	<1 %	15 %
all other publishers (n = 1,795)		80,787	25 %	21 %	29 %	16 %	6 %	3 %

**Table 9: Distribution of subject category by publisher group**



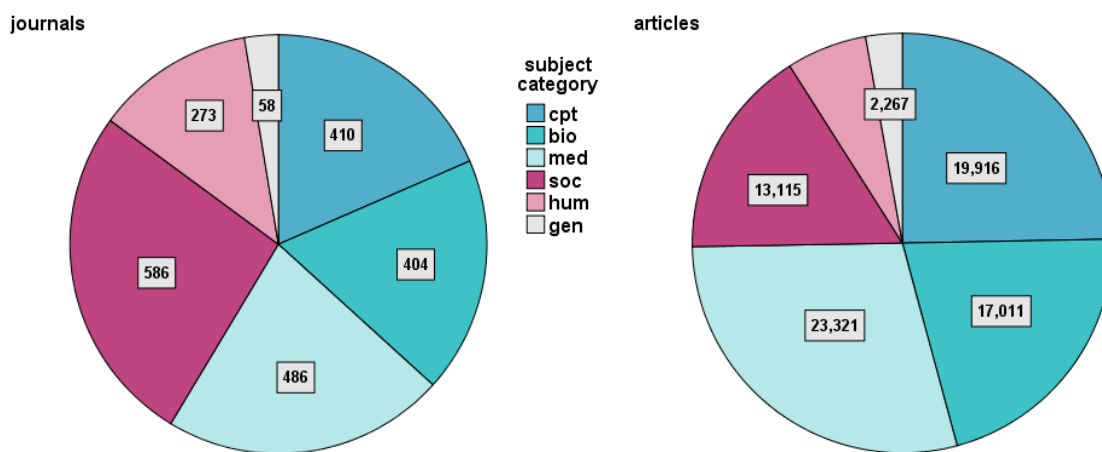


Figure 4: Distribution of journals (a & c) and articles (b & d) by subject category for large publishers and the other publishers

### 3.2.4 Publisher type and commercial interest

The large publishers include six commercial publishers representing 549 journals (89%) with 17,445 articles per year (48%). Six other non-profit organisations publish another 39 journals (9%) with 15,690 articles per year (49%). The status of “Academic Journals” and “World Acad. Science, Engineering & Technology” could not be determined from their websites. This information is summarised in Table 10.

type	profit status	large publishers	journals	articles
publ. house	commercial	Asian Network for Scientific Information	13	2,514
publ. house	commercial	Bentham open	154	1,663
publ. house	commercial	BioMed Central	176	8,993
publ. house	commercial	Hindawi Publishing Corporation	85	2,044
publ. house	commercial	Internet Scientific Publications	62	657
publ. house	commercial	Medknow Publications	59	1,574
publ. house	non-profit	Copernicus Publications	18	2,012
publ. house	non-profit	Public Library of Science	7	4,368
publ. house	n/a	Academic Journals	10	1,001
learned soc.	non-profit	Indian Academy of Sciences	10	1,152
learned soc.	non-profit	Optical Society of America	1	1,961
miscellaneous	non-profit	Oxford University Press	2	1,032
miscellaneous	non-profit	The International Union of Crystallography	1	5,165
miscellaneous	n/a	World Acad. Science, Engineering & Technology	18	1,960

Table 10: Publisher type and commercial interest of the large publishers

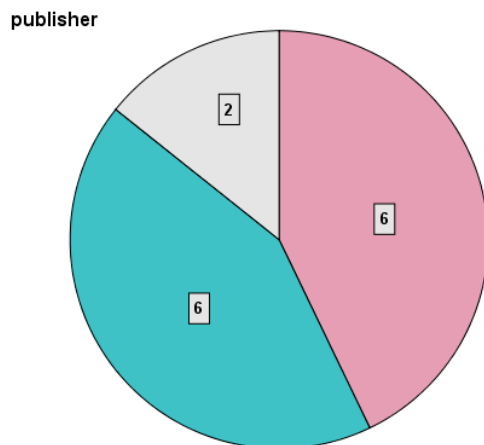
Among the other publishers there were only 92 members identified as publishing houses (5%) with 213 journals (10%) and 12,076 articles per year (15%). These are mostly commercial enterprises. The 246 non-profit learned societies make up another 14% of the publishers responsible for 264 (12%) of the journals with 16,697 articles per year (21%). More than 1,400 unclassified publishers publish a total of 1,700 journals with almost 50,000 articles per year (64%). The share of discernable commercial organisations is rather low among them. Table 11 shows these distributions among the other publishers.

	other publishers			journals			articles		
	all	profit	no-profit	all	profit	no-profit	all	profit	no-profit
publ. house	92	63	12	213	162	14	12,076	8,710	1,588
learned soc.	267	0	246	290	0	264	17,538	0	16,697
other	1220	18	1120	1499	20	1351	44,088	501	39,940
n/a	216	1	16	220	1	16	7,085	32	666
total	1795	82	1394	2222	183	1645	80,787	9,243	58,891

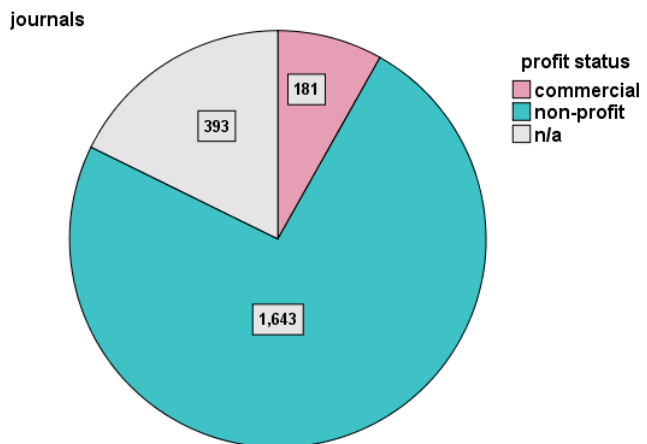
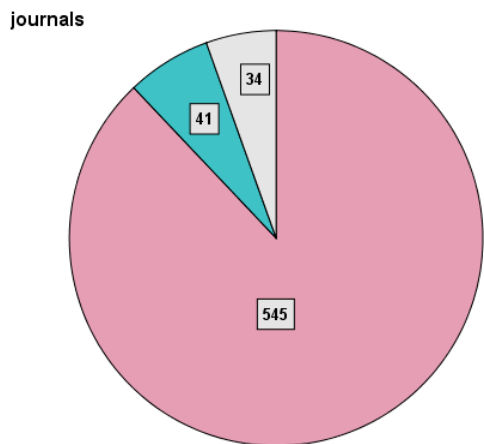
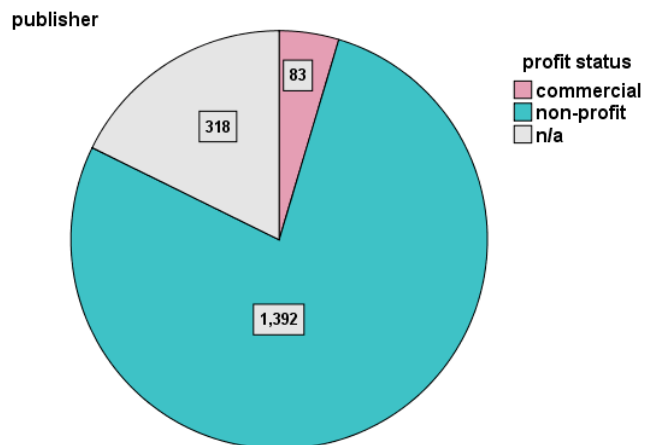
Table 11: Publisher type and commercial interest of the other publishers

In Figure 5, we present a summary of the commercial interest with respect to the number of publishers, the number of journals and the number of articles.

### large publishers



### other publishers



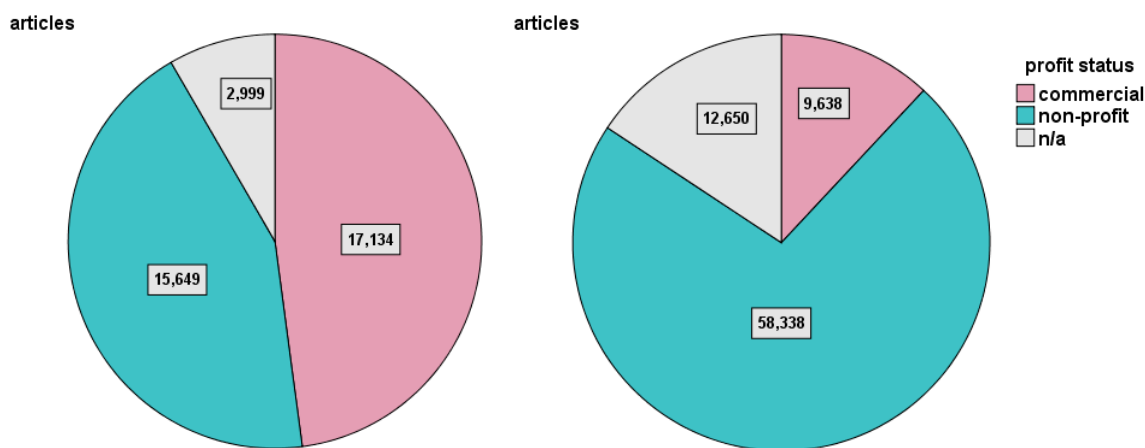


Figure 5: Distribution of publishers, journals and articles according to commercial interest for the large publishers (a, c, e) and other publishers (b, d, f)

### 3.2.5 Journal start dates

Table 12 presents the date for which the first open access content is available for the journals in the sample. Owing to the digitisation of old issues, some titles are open access since 1881 (*Bulletin of the American Museum of Natural History*). The content of 102 journals is available open access in the time period from 1910 to 1989. A striking increase of open access journals is found with the onset of electronic publishing, starting in the mid-1990s, as also presented in Figure 6. From the year 2000 onward there is a rather steady level of approximately 200 to 300 new open access journals added each year.

start date	journals
until 1950	11
1950 - 1959	5
1960 - 1969	12
1970 - 1979	23
1980 - 1989	51
1990 - 1994	95
1995 - 1999	451
2000 - 2004	1,067
2005 - 2008	848

Table 12: Start date ranges of open access sampled journals

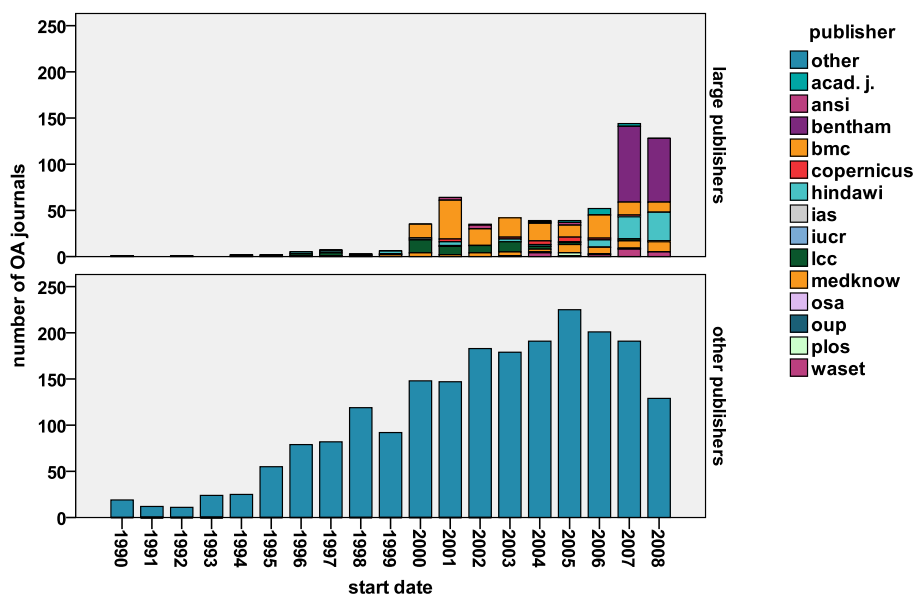


Figure 6: Journal start date by publisher for large publishers and other publishers

Recent years have shown a different development of the large publishers and the other publishers. The large publishers show a considerable increase in their offers, mostly driven by the large fleet of titles launched by Bentham Science and Hindawi Publishing Corporation.

group	publisher	active journals	start date			sum
			2006	2007	2008	2006-2008
large	Bentham open	154	0	82	69	151
large	Hindawi Publishing Corporation	85	8	24	31	63
large	BioMed Central	176	25	14	11	50
other	Libertas Academica	36	5	6	22	33
other	Versita	27	1	16	10	27
large	Medknow Publications	59	7	8	11	26
large	World Acad. Science, Engineering &Technology	18	1	8	5	14
other	Frontiers Research Foundation	12	0	10	2	12
large	Academic Journals	10	6	3	0	9
other	Dove Medical Press	10	0	2	7	9
other	Hikari Ltd	6	2	4	0	6
other	Science publications	13	4	0	1	5

Table 13 lists publishers with the most remarkable growth in number of journals in recent years. There is a slower rate of new additions for the other publishers, which could also be influenced by delays in their registration in the DOAJ.

group	publisher	active journals	start date			sum
			2006	2007	2008	2006-2008
large	Bentham open	154	0	82	69	151
large	Hindawi Publishing Corporation	85	8	24	31	63
large	BioMed Central	176	25	14	11	50
other	Libertas Academica	36	5	6	22	33
other	Versita	27	1	16	10	27
large	Medknow Publications	59	7	8	11	26
large	World Acad. Science, Engineering &Technology	18	1	8	5	14
other	Frontiers Research Foundation	12	0	10	2	12
large	Academic Journals	10	6	3	0	9
other	Dove Medical Press	10	0	2	7	9
other	Hikari Ltd	6	2	4	0	6
other	Science publications	13	4	0	1	5

Table 13: Publishers adding at least 5 new journals during 2006-2008

A breakdown of journals in subject category as a function of time is presented in Figure 7 for the large publishers and the other publishers. It is interesting to note that relatively many journals in Chemistry, Physics and Technology from the other publishers started already in the early 1990's. Recent additions are mostly in the medical sciences for the large publishers.

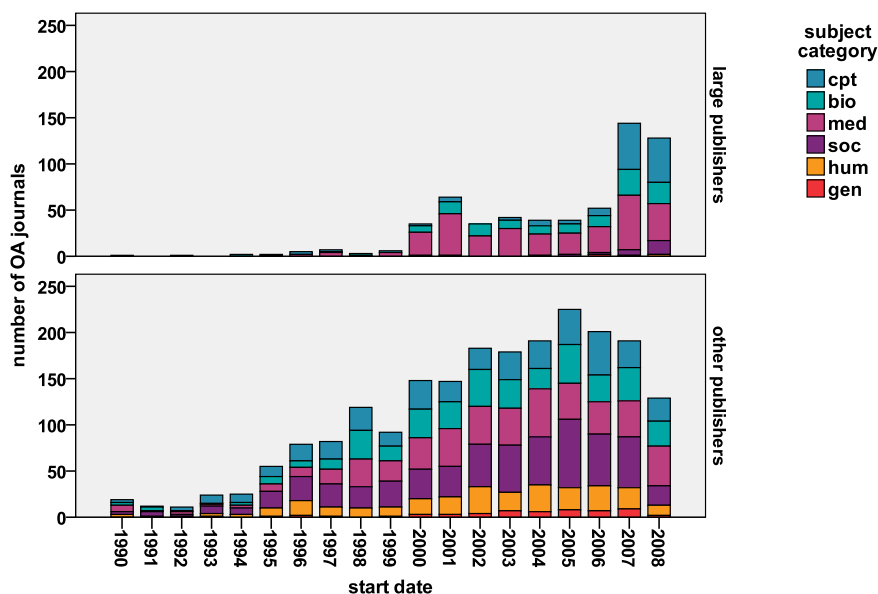


Figure 7: Journal start date by subject discipline for large publishers and other publishers

### 3.2.6 Income sources

Information on income sources was available for almost all of the 620 journals of the large publishers but retrievable only for 1,338 (60%) of the journals from the other publishers. The results are presented in Table 14 and Figure 8. It should be noted that only incidents of the various income categories were counted; the real income proportions of the publishers and journals were not available.

The first column in Table 14 represents the publisher codes for the large publisher, the second column the number of journals. The following two columns show the total number of journals for which the information was retrieved. The last seven columns represent the percentage of journals published by the publisher which appear to have such an income stream (a-article processing charge, b-membership fee, c-advertisement, d-sponsorship, f-subscription, g-hard copy x-other). The last two rows represent total figures. Given the use of multiple possibilities, the percentages in the last seven columns exceed 100%.

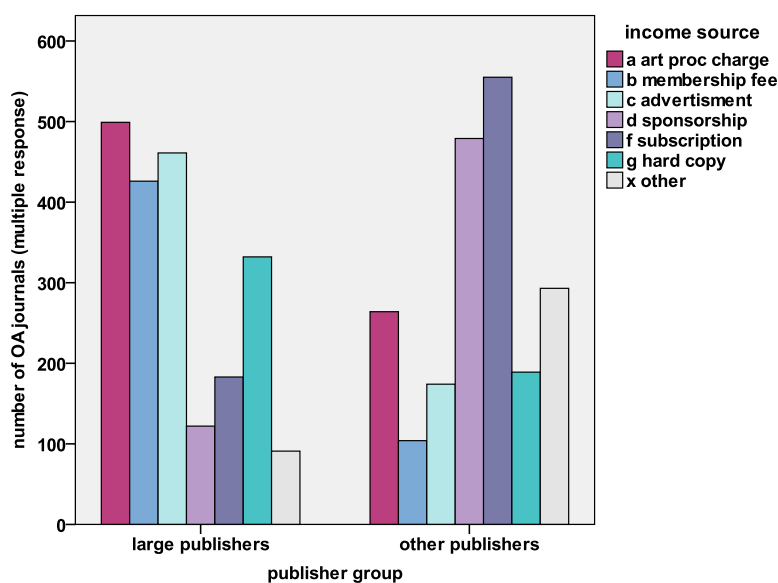
There is no substantial prevalence of any of the eight specified income options listed in section 3.1.3<sup>12</sup>. Their relative importance changes depending on publisher size. Large publishers do have a considerably higher incidence of "article processing charge", "membership fees" and "advertisements" as income sources than the other publishers. For the latter "article processing charges" still appear, but this is rarely the case for "membership fees" and "advertisements". "Sponsorship" and "print subscriptions" play a comparably smaller role for the large publishers, whereas these are the most frequent

<sup>12</sup> For reference, these are: (a) article processing charge; (b) membership fee; (c) advertisement; (d) sponsorship; (f) subscription; (g) hard copy and (x) other.

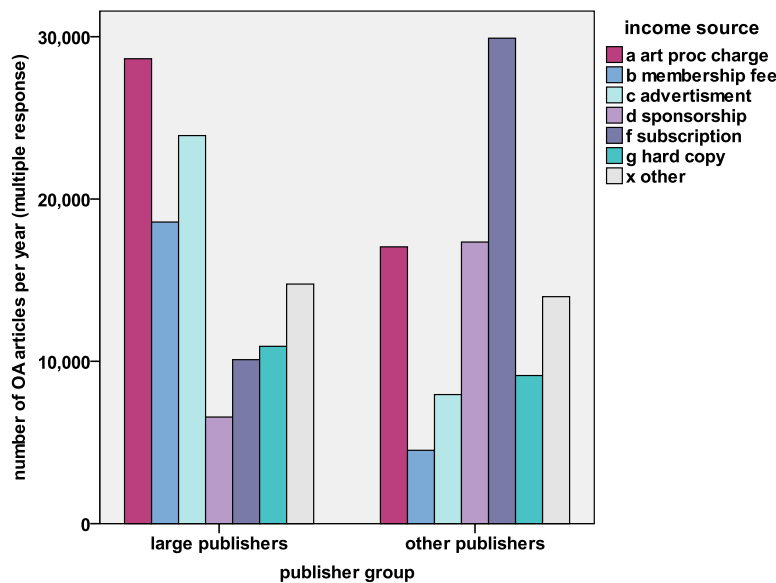
sources amongst the other publishers. Hard copy sales are at an intermediate position for both groups. The options "subsidy" (33 journals) and "consortium" (1 journal) were rarely present and are therefore ignored in the following.

publisher	journals	info found	fraction of journals with income source							
			a	b	c	d	f	g	x	
acadj	10	10	100%	all	-	all	-	-	-	all
ansi	13	13	100%	-	-	-	-	all	15 %	all
bentham	154	154	100%	all	all	all	-	-	99 %	1 %
bmc	176	176	100%	97 %	96 %	99 %	-	1 %	all	-
copernicus	18	18	100%	83 %	83 %	-	-	83 %	22 %	all
hindawi	85	85	100%	all	all	-	-	all	-	-
ias	10	10	100%	-	-	10 %	-	all	30 %	10 %
ispub	62	62	100%	all	-	all	all	-	-	all
medknow	59	59	100%	-	-	all	all	all	-	all
osa	1	1	100%	all	-	-	-	-	-	-
oup	2	2	100%	all	-	-	-	50 %	-	all
plos	7	7	100%	all	all	all	all	29 %	-	all
iucr	1	1	100%	all	-	all	-	-	-	all
waset	18	18	100%	-	-	-	-	-	-	all
large	616	616	100 %	82 %	70 %	76 %	21 %	30 %	55 %	31 %
other	2222	1338	60 %	20 %	8 %	13 %	36 %	42 %	14 %	22 %

Table 14: Income sources for journals by publisher

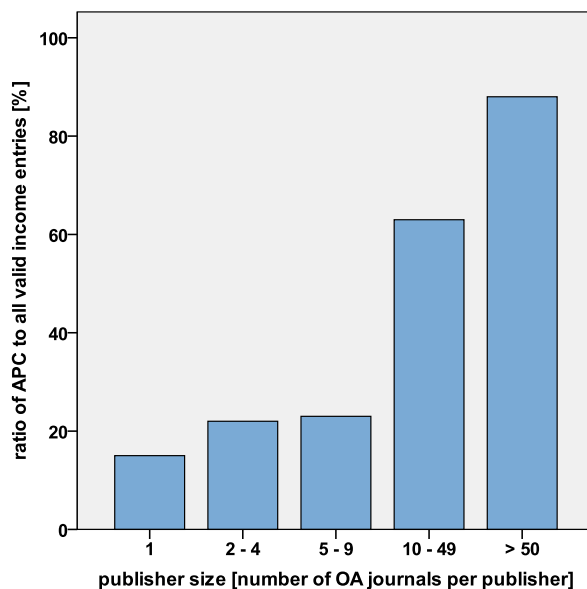






**Figure 8: Number of a) journals and b) articles as a function of the income source of publishers, for the large publishers and the other publishers**

There is a correlation between the prevalence of "article processing charge" as an income source and the size of the publisher measured by the number of journals, as presented in Figure 9. 90% of the publishers with more than 50 journals and 65% of medium sized publishers (10 to 49 journals) rely on article processing charges, whereas this number drops to about 20% for publishers who have 2-9 journals. Only 15% of publishers with one journal make an article processing charge.



**Figure 9: Ratio of article processing charge to all income sources by publisher size**

Among the group of other publishers there appears to be some correlation between subject domain and income sources, as presented in Table 15. The first column represents the subject category, the second column the number of journals. The following two columns show the number of journals for which the information was retrieved. The last seven columns represent the percentage of journals published by the publisher which appear to have such an income stream (a-article processing charge, b-membership

fee, c-advertisement, d-sponsorship, f-subscription, g-hard copy x-other). The last two rows represent total figures. Given the use of multiple possibilities, the sum of percentages in the last seven columns exceeds 100%.

For example, the combination of “article processing charges” and “subscription” appears to be favoured in the science fields. Journals from the social sciences and the humanities show instead a notable prevalence of “sponsorship”.

subject category	selected journals	sources found		fraction of journals with income source						
				a	b	c	d	f	g	x
cpt	410	270	66 %	17 %	5 %	8 %	32 %	47 %	18 %	18 %
bio	407	292	72 %	30 %	9 %	7 %	33 %	49 %	14 %	29 %
med	488	360	74 %	28 %	9 %	27 %	24 %	53 %	10 %	26 %
soc	586	278	47 %	8 %	8 %	9 %	53 %	26 %	17 %	13 %
hum	273	106	39 %	2 %	9 %	8 %	54 %	15 %	14 %	20 %
gen	58	32	55 %	13 %	6 %	13 %	31 %	31 %	9 %	28 %

Table 15: Income sources by subject category for other publishers

### 3.2.7 Copyright

Half of the large publishers use a version of a creative commons license (cc), as summarised in Table 16. These seven publishers hold together 72% of the titles and 71% of the articles investigated. The other seven request a transfer of copyright to the publisher (co). Copyright information is available only for 73% of the journals of other publishers, and among these, the transfer of copyright is much more common (69%) than a creative common license (21%). The author retains copyright for the remaining 10% of these journals.

publisher	journals	info found	cc ..	co	au
Academic Journals	10	10 100 %	-	100 %	-
Asian Network for Scientific Information	13	13 100 %	-	100 %	-
Bentham open	154	154 100 %	100 %	-	-
BioMed Central	176	176 100 %	100 %	-	-
Copernicus Publications	18	18 100 %	100 %	-	-
Hindawi Publishing Corporation	85	85 100 %	100 %	-	-
Indian Academy of Sciences	10	9 90 %	-	100 %	-
Internet Scientific Publications	62	62 100 %	-	100 %	-
Medknow Publications	59	59 100 %	-	100 %	-
Optical Society of America	1	1 100 %	-	100 %	-
Oxford University Press	2	2 100 %	100 %	-	-
Public Library of Science	7	7 100 %	100 %	-	-
The Int. Union of Crystallography	1	1 100 %	100 %	-	-
World Acad. Science, Eng. & Tech.	18	18 100 %	-	100 %	-
large publishers	616	615 100 %	72 %	28 %	-
other publishers	2222	1392 63 %	27 %	61 %	12 %

publisher	articles	info found	cc ..	co	au
large publishers	36,096	35612 99 %	71 %	29 %	-
other publishers	80,787	59320 73 %	21 %	69 %	10 %

Table 16: Copyright by publisher

As shown in Table 17, the large publishers usually use cc-by (6 publishers) or the more restrictive cc-by-nc (3 publishers) as variant of the creative commons licenses in equal

shares at the journal level. However, due to the different size of the journals, cc-by is the dominant version at the article level.

cc variant	publishers*			journals		articles	
cc-by	acad. j., bmc, bentham, copernicus, iucr, plos	6	71 %	208	47 %	20,608	82 %
cc-by-nc	bentham, hindawi, oup	3	43 %	235	53 %	4,669	18 %
total				443		25,277	

**Table 17: Creative Commons license variants used among the large publishers**

\*The same publisher may publish journals in more than one subject areas. Therefore the publisher figures in this table represent multiple entries.

Among the 371 journals of the other publishers for which information on the variant of the cc license was retrieved, a similar pattern was found, with cc-by as the most used, followed by more restrictive versions usually including the nc ("non-commercial") attribute. The most restrictive version cc-by-nc-nd was found for 68 journals. These results are summarised in Table 18.

cc variant	publishers*		journals		articles	
cc	93	32 %	99	27 %	3,559	29 %
cc-by	67	23 %	118	32 %	3,635	30 %
cc-by-nc	48	16 %	57	15 %	2,856	23 %
cc-by-nc-nd	64	22 %	68	18 %	1,430	12 %
cc-by-nc-sa	14	5 %	14	4 %	477	4 %
cc-by-nd	6	2 %	6	2 %	109	1 %
cc-by-sa	9	3 %	9	2 %	191	2 %
total	292		371		12,257	

**Table 18: Creative Commons license variants used among the other publishers**

\*The same publisher may publish journals in more than one subject areas. Therefore the publisher figures in this table represent multiple entries.

### 3.2.8 Impact factor

Several entities use the inclusion of a journal in ThomsonReuters the ISI-JCR database, and the corresponding numerical indicators for impact factors, as indicators for scientific quality. In other cases, inclusion in the Scopus database is also used as an indicator. It is therefore interesting to analyse this attribute for open access journals and publishers.

Table 19 lists the number of DOAJ journals listed in the ISI-JCR and Scopus databases for the entire DOAJ sample and for the titles retained for this analysis. 11% of the selected journals appear in ISI-JCR, while the multidisciplinary article reference database Scopus (Elsevier) lists 41%.

data source	DOAJ journals		selected journals	
DOAJ 2009	4,032		2,838	
Scopus 2009	1,527	38 %	1,176	41 %
ISI-JCR for 2008	335	8 %	313	11 %

**Table 19: Number of DOAJ journals found in other reference sources**

The distribution of the ISI-JCR impact factor among the large publishers is shown in Table 20. Noticeably there is no difference between the large publishers and the other publishers with respect to the fraction of titles that are listed in ISI-JCR (12% and 11% respectively).

<b>publisher</b>	<b>journals</b>	<b>articles</b>	<b>fraction of ISI-JCR journals</b>		<b>fraction of ISI-JCR articles</b>	
Academic Journals	10	1,001	1	10 %	504	50 %
Asian Network for Scientific Information	13	2,514	0	-	0	-
Bentham open	154	1,663	0	-	0	-
BioMed Central	176	8,993	35	20 %	4,445	49 %
Copernicus Publications	18	2,012	6	33 %	784	39 %
Hindawi Publishing Corporation	85	2,044	11	13 %	467	23 %
Indian Academy of Sciences	10	1,152	9	90 %	1,076	93 %
Internet Scientific Publications	62	657	0	-	0	-
Medknow Publications	59	1,574	1	2 %	53	3 %
Optical Society of America	1	1,961	1	100 %	1,961	100 %
Oxford University Press	2	1,032	2	100 %	1,032	100 %
Public Library of Science	7	4,368	5	71 %	1,003	23 %
The International Union of Crystallography	1	5,165	1	100 %	5,165	100 %
World Acad. Science, Eng. & Technology	18	1,960	0	-	0	-
large publishers	616	36,096	72	12 %	16,490	46 %
other publishers	2222	80,787	241	11 %	20,915	26 %

**Table 20: ISI-JCR visibility of open access journals and articles per publisher**

The fraction of ISI-JCR titles does not seem to depend strongly on the number of journals per publishers, nor their size, as presented in Table 21.

<b>journals per publisher</b>	<b>journals</b>	<b>articles</b>	<b>ISI-JCR journals</b>		<b>ISI-JCR articles</b>	
1	1,621	63,887	181	11 %	23,138	36 %
2 to 4	345	14,934	39	11 %	4,165	28 %
5 to 9	146	10,508	22	15 %	2,018	19 %
9 to 49	190	12,623	24	13 %	3,119	25 %
50 and more	536	14,931	47	9 %	4,965	33 %

**Table 21: ISI-JCR visibility of open access journals and articles as a function of publisher size**

There is, however, a very distinct relationship between the rate of inclusion in the ISI-JCR with respect to the subject domain of the journal. Only 19 journals in social sciences and humanities, accounting for less than 500 articles per year, appear in ISI-JCR, as listed in Table 22. This is a known pattern in these fields, not specific to open access journals.

<b>subject category</b>	<b>journals</b>	<b>articles</b>	<b>ISI-JCR journals</b>		<b>ISI-JCR articles</b>	
Cpt	549	33,158	83	15 %	16,256	49 %
Bio	533	24,767	111	21 %	10,105	41 %
Med	806	32,879	95	12 %	10,336	31 %
Soc	611	13,506	18	3 %	429	3 %
Hum	276	5,030	1	0.4 %	33	1 %
Gen	63	7,543	5	8 %	246	3 %

**Table 22: ISI-JCR visibility of OA journals and articles by subject categories**

### 3.3 MULTIDIMENSIONAL SUMMARY

This section presents a multi-dimensional summary, where most of the variables discussed in the preceding sections are simultaneously investigated.

### 3.3.1 Large Publishers

The large publishers are not a homogeneous group with respect to the variables analysed within this study. The group includes new players (ansi, bentham, bmc, hindawi, ispub, medknow) with a rather high numbers of journals, often each with low to medium numbers of articles; long-standing learned societies (osa, iucr) with a single large journal with a high number of articles; and non-profit publishing houses (plos, copernicus). Table 23 presents a summary of the main characteristics of these publishers.

code	journals	art	t	i	c	fraction of journals with income source						
						a	b	c	d	f	g	x
acadj	10	1,001	p	n/a	co	all	-	all	-	-	-	all
ansi	13	2,514	p	fp	co	-	-	-	-	all	some	all
bentham	154	1,663	p	fp	cc	all	all	all	-	-	most	few
bmc	176	8,993	p	fp	cc	most	most	most	-	few	all	-
copernicus	18	2,012	p	n	cc	most	most	-	-	most	some	all
hindawi	85	2,044	p	fp	cc	all	all	-	-	all	-	-
ias	10	1,152	s	n	co	-	-	few	-	all	some	few
ispub	62	657	p	fp	co	all	-	all	all	-	-	all
medknow	59	1,574	p	fp	co	-	-	all	all	all	-	all
osa	1	1,961	s	n	co	all	-	-	-	-	-	-
oup	2	1,032	x	n	cc	all	-	-	-	some	-	all
plos	7	4,368	p	n	cc	all	all	all	all	some	-	all
iucr	1	5,165	x	n	cc	all	-	all	-	-	-	all
waset	18	1,960	x	n/a	co	-	-	-	-	-	-	all

**Table 23: Summary of variables assessed for the 14 large publishers**

t = publisher type (p = publishing house, s = society, x = other); i = profit status (n = non-profit, fp= commercial); c = copyright type (co = copyright transfer, cc = creative commons); income source (a = article processing charges, b = membership fees, c = advertisement, d = sponsorship, f = subscription, g = hard copy sales, x = other), - = 0%; few = <20%; some = 20-80%; most = >80%; all = 100%

There are no special traits with respect to income sources and copyright/licensing options. Bentham Publishing and BioMed Central are rather similar in their copyright/licensing practices and business model. They tend to use a combination of article processing charge, membership fees, advertisement and hard copy sales as sources of income and favour the use of creative common licenses. Hindawi Publishing Corporation, Internet Scientific Publications and Medknow Publications are very specific in their own practices and strategies. Hindawi Publishing Corporation tends to use article processing charges, membership fees and offer subscription to the print version of the journal. Internet Scientific Publications also use article processing charges, advertisement and sponsorship as sources of income and they request that copyright is transferred to the publisher. Similarly, Medknow publications also request that copyright is transferred to the publishers but they do not use article processing charge. Instead they favour advertisement, sponsorship and subscription to the print version of the journal for their business.

There is, however, one very conspicuous feature that these large publishers have in common. They all publish almost exclusively within the STM fields (cpt, bio, med). In total only 5% of the journals, with no more than 1% of the annual articles, are in the fields of social sciences or arts and humanities.

### 3.3.2 Other Publishers

The 1,795 remaining publishers with their 2,222 open access journals differ from those large publishers mentioned above in the following aspects:

- broader coverage of subject categories
- low incidence of publishing houses and/or commercial activities
- dominance of copyright transfer over creative commons as copyright mode
- less frequent incidence of article processing charges as income source
- lower incidence of membership fees, advertisement and hard copy sales
- higher incidence of sponsorship and subscription to the print version

Table 24 presents a comparison among the large publishers and the other publishers with respect to the variables considered in this analysis.

journals				
	large		other	
<b>publisher type</b>				
publ.house	584	95 %	213	11 %
learned soc.	11	2 %	290	14 %
other	21	3 %	1,499	75 %
<b>profit status</b>				
commercial	549	93 %	183	10 %
non-profit	39	7 %	1,645	90 %
<b>copyright/licensing</b>				
creative commons	443	72 %	371	30 %
copyright transfer	172	28 %	855	70 %
<b>income sources</b>				
a art proc charge	507	23 %	264	13 %
b membership fee	430	19 %	104	5 %
c advertisement	469	21 %	178	9 %
d sponsorship	128	6 %	481	23 %
f subscription	186	8 %	559	27 %
g hard copy sales	338	15 %	189	9 %
x other	193	9 %	294	14 %

**Table 24: Comparison of characteristics of large publishers versus other publishers**

### 3.4 DISCUSSION

The analysis presented in this section aims to further the understanding of the current existing open access offering from many publishers, using the DOAJ as an entry point. A similar approach has been followed in the past. For example, Kaufman-Wills (2005)<sup>13</sup>, Dewatripont (2006)<sup>14</sup>, Regazzi (2004)<sup>15</sup>, Morris (2006)<sup>16</sup> used data from the DOAJ in their studies addressing open access journals, number of articles for journals indexed in ISI-JCR, frequency of use of an article processing fee. Our results augment the existing body of knowledge for the following reasons:

- Article level information was not only collected for journals indexed in ISI-JCR or SCOPUS but for a wider set.
- Copyright/licensing practices of journals and specifically the practice of the various creative commons licenses was analysed in detail.
- Income sources as a means to sustain the functional operation were investigated in detail, beyond the article-processing-charge attribute, which was the focus of similar analyses.
- A comparison of the relation between whether journals have an impact factor and the size and other characteristics of publishers was performed.

While this approach brings new aspects and insight into the open access debate, it must be remembered that our sample did not cover the entire DOAJ sample, of 4,032 journals at the time of the data extraction. Some 1,200 journals were removed from the original DOAJ sample as not in the English language. This decision stems from the analysis of

<sup>13</sup> [http://www.alpsp.org/ngen\\_public/article.asp?id=200&did=47&aid=270&st=&oaid=-1](http://www.alpsp.org/ngen_public/article.asp?id=200&did=47&aid=270&st=&oaid=-1)

<sup>14</sup> [http://ec.europa.eu/research/science-society/pdf/scientific-publication-study\\_en.pdf](http://ec.europa.eu/research/science-society/pdf/scientific-publication-study_en.pdf)

<sup>15</sup> DOI: 10.1016/j.serrev.2004.09.010.

<sup>16</sup> DOI: 10.1087/095315106775122565

open access as a global issue, where journals have an offer beyond their national borders, which is in the remit of the SOAP studies. Some graphs and tables in this study would have looked different if all 4,032 DOAJ journals had been considered. Another known limitation in our approach is the fact that not all data fields were filled for the selected journals, given the impracticability of manually exploring thousands of web pages to extract the relevant information. Efforts were concentrated for the group of large publishers. Small systematic uncertainties arising from the manual harvesting and entry of information could be present in the data sample, but are not likely to alter any of the statistically significant findings of this study.

The main findings of the analysis discussed in this chapter are summarised as follows:

- Open access publishing is a very dynamic field. Each year in the last decade saw the launch of 200 to 300 new open access journals, reaching a peak with the large new offerings of Bentham and Hindawi in 2007 and 2008.
- The distribution of journals per publishers is extremely skewed. A small number of large publishers appears on one side, with a large number of journals and/or articles. On the other side there is a vast majority of about 90% of all publishers with a single journal. The middle ground is hardly populated.
- Large publishers are predominantly active in the STM subject fields, with 95% of the journals and 84% of the annual articles.
- The larger the publishing operations, the more likely they are to be a commercial company, rather than not-for-profit.
- Medicine is the subject area with the largest number of open access journals, followed more or less equally by Chemistry, Physics and Technology, Biology and Life Sciences, and the Social Sciences; the Humanities follow at a greater distance. However, when the 14 large publishers are separated out, the subject distribution both on the publisher and article level becomes more differentiated.
- Both large publishers and other publishers are equally likely to have journals with an impact factor.
- Large publishers are more likely to rely on article processing charges (as well as membership fees and advertisement) as their income source, whereas the other (smaller) publishers base their operations more on sponsorship and subscriptions in addition to article processing charges, which they use as well. This information was collected from the journal websites; there might of course be other financial aspects of the journal incomes which are not made publicly available.
- Most of the large publishers use a version of a creative commons license. They usually use cc-by or the rather more restrictive cc-by-nc. For the other publishers, transfer of copyright to the publisher is much more common (69%) than a creative common license (21%). When details of the creative commons license was available, other publishers presented a pattern similar to large publishers favouring cc-by followed by cc-by-nc.



## 4. QUANTITATIVE ANALYSIS OF HYBRID JOURNALS

### 4.1 INTRODUCTION

The hybrid model is an essential part of the open access landscape. It was established around 2004, and spread quickly thereafter. It represented an adaptation from established players in the publishing industry to the requests of various funding agencies and research organisations. Hybrid journals are subscription journals which offer authors the option to publish their individual article under open access, against payment of an article processing charge. A list of “publishers with paid options for open access”, maintained by Sherpa/Romeo counted 80 publishers in the beginning of 2010, many of them being society and other academic publishers<sup>17</sup>. This startling array of options, publishers and subject areas highlights the growth of the hybrid option. However, little is known of the effective success of the hybrid option, or its market penetration. This report aims to shed light on these aspects.

### 4.2 METHODOLOGY

A closer analysis of the Sherpa/Romeo list shows that most of the publishers are relatively small operations, accounting in general for just a few journals per annum, with the exception of 12 very large publishing operations. Those 12 are set to dominate the average rate of market penetration of the hybrid offer and are therefore retained for further analysis. They are listed in the first column of

Table 25. The websites of these major publishers were examined to assess their hybrid offering, counting the number of journals with and without such an option, which are also presented in the table, together with the branding of the hybrid offer and the article processing charges.

<b>publisher</b>	<b>journals without hybrid option</b>	<b>journals with hybrid option</b>	<b>hybrid branding</b>	<b>article processing charges (discounts may apply)</b>
American Chemical Society	0	35	Author Choice	\$3,000
American Physical Society	0	7	Free to Read	\$975/ \$1,300
Cambridge University Press	238	15	Cambridge Open Option	\$2,700
Elsevier (including Cell Press)	2,310	68	Sponsored Article	\$3,000-\$5,000
Nature Publishing Group	72	14	Open access option	\$3,000
Oxford University Press	147	90	Oxford Open	\$3,000
PNAS	0	1		\$1,200
Royal Society (UK)	0	7	EXiS Open Choice	\$4,420
SAGE	560	54		\$3,000
Springer	690	1,100	Open Choice	\$3,000
Taylor&Francis	1,000	300	iOpen Access	\$3,250
Wiley Blackwell	1,100	300	OnlineOpen	\$3,000

**Table 25: Overview of the offer of hybrid journals for the 12 most significant publishers in the field. Status October 2009**

<sup>17</sup> <http://www.sherpa.ac.uk/romeo/PaidOA.html>.

This process allows understanding the hybrid offering, but not the penetration of the model, since open access articles are often not clearly marked in hybrid journals, and are also not automatically retrievable from many publishing platforms. Therefore, publishers with a hybrid offering were directly approached, inquiring about the total number of open access articles published in their hybrid journals, the total article output of the publisher in the same time frame as well as the article output in hybrid titles only<sup>18</sup>.

### 4.3 RESULTS

The twelve analyzed publishing houses account for about 8,100 journals, mostly in the STM field, of which 25% offer a hybrid option. These figures are summarised in

Table 26.

	journals without hybrid option	journals with hybrid option	total
sum (absolute)	6,117	1,991	8,108
sum (relative)	75%	25%	100%

**Table 26: Summary of analyzed publishers' offering in toll access, open access and hybrid journals. Status October 2009**

Table 27 presents the number of open access articles published in hybrid journals in a given time frame, per publisher. This number is compared to the corresponding total article output and the article output in hybrid journals. Some educated estimates were necessary for incomplete data. These estimates belong to two categories. The total number of articles is estimated from commonly available sources in the field. The number of articles in hybrid journals, when not available, is estimated by assuming a constant number of articles per journal and using the fraction of journals offering a hybrid option over the total number of journals for that given publisher.

<b>publisher</b>	<b>time range</b>	<b>OA articles</b>	<b>total articles</b>	<b>articles in hybrid journals only</b>
American Chemical Society	Jan - Dec 2009	210	34,611	34,611
American Physical Society	Jan - Jun 2009	12	9,558	estimate 9,400
Cambridge University Press	Jan 08 -Jun 09	22	estimate 15,000	estimate 900
Elsevier (including Cell Press)	Jan - Oct 2009	430	estimate 202,000	estimate 21,250

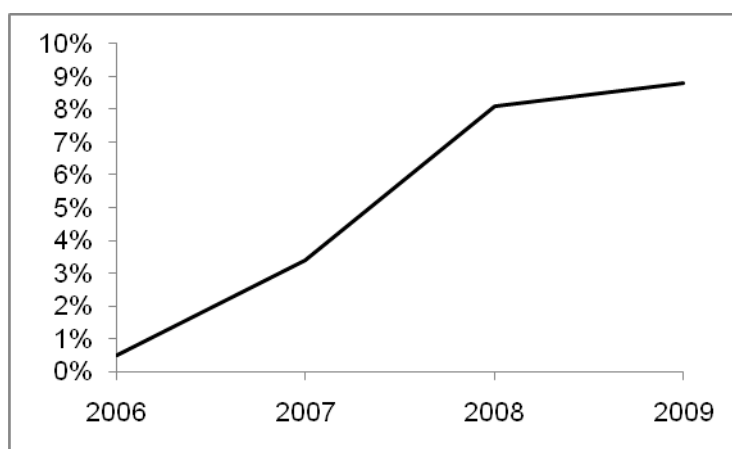
<sup>18</sup> It is interesting to note that investigating the open shares of hybrid journals is complicated by the fact that publisher platforms did not allow a targeted search for open access articles in late 2009. A first method which was considered and later abandoned was to compare entries for a journal articles in PubMed and PubMed Central. Searching in PubMed would retrieve the total number of articles of a journal (if it is indexed by PubMed), while a search in PubMed Central would retrieve the number of articles with a freely available fulltext. This approach, however, would have had three limitations. Not all articles freely available in Pubmed Central are necessarily open access articles. Very few subscription journals make all their full texts available at Pubmed Central for various reasons. Further, the focus of analyzed journals would lie with (bio) medical and life science research. Both fields are well known to be forward thinking with respect to open access, a movement that is driven by various funding agencies specific to these fields. Finally, analyzing only journals indexed by PubMed could introduce a bias towards journals of higher quality.

Nature Publishing Group	Jan - Nov 2009	147	estimate 12,000	2,693
Oxford University Press	2008	882	13,241	estimate 1,200
PNAS	Jan - Nov 2009	840	3,253	3,253
Royal Society (UK)	Jan - Oct 2009	143	1,823	1,823
SAGE	2009	10	25,631	5,147
Springer	2009	1,520	157,000	100,000
Taylor&Francis	2008	24	60,000	estimate 15,000
Wiley Blackwell	Jan - Oct 2009	342	estimate 112,000	estimate 24,000

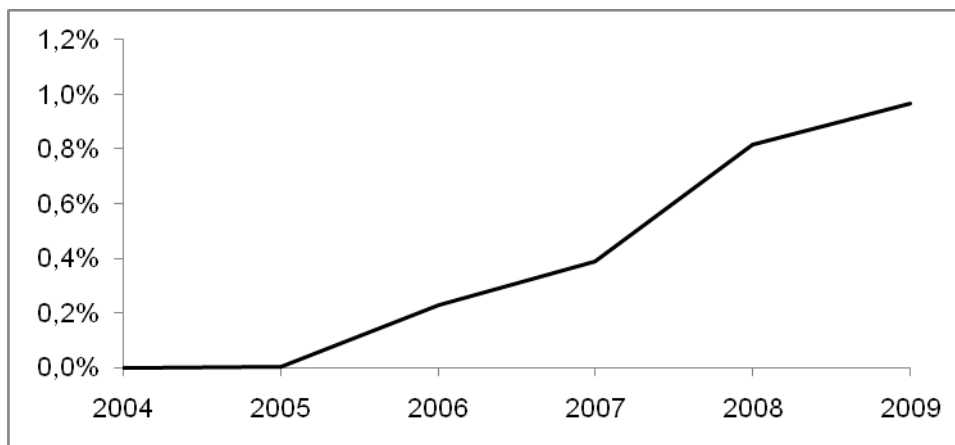
**Table 27: Overview of publishers' responses on the uptake of the hybrid open access option**

Dividing the total number of hybrid open access articles by the total number of articles results in an average open access share of about 0.7% across the 12 publishers. This relatively low rate reflects the fact that only a quarter of the journals of these publishers offered a hybrid option. To eliminate this bias, it is important to re-calculate this ratio only for journals offering a hybrid option. With these input values, the open access share in hybrid journals increases to around 2%. This number is calculated as the weighted average over all publishers, normalised to a 12 months period.

Two publishers, The Royal Society and Springer were kind enough to share data on the chronological development of articles published with the open access under the hybrid option. These are presented in Figure 10 and Figure 11.



**Figure 10: Development of the share of open access articles in the seven hybrid journals of The Royal Society**



**Figure 11: Development of the share of paid open access articles in the hybrid journals published by Springer within their hybrid offering**

#### 4.4 DISCUSSION

We analyzed the penetration of the hybrid offering for a group of 12 large publishers which cover, with around 8,100 journals, one third of the roughly 25,400 STM journals currently published<sup>19</sup> and found that 25% of their journals offer the hybrid option. The penetration of hybrid titles across the overall journal market might be somehow lower, although many smaller publishers such as societies have introduced the hybrid option, too. The twelve examined publishers publish about 2% of open access articles in their hybrid journals.

The PNAS hybrid journal boasts an impressive open access share of 26%. This is followed by two British publishers: The Royal Society and OUP. While the Royal Society offers the hybrid option for all journals, OUP offers it for 90 out of 242 journals. In any case, the high uptake compared with other publishers might be explained by both the geographical as well as the disciplinary scope of publisher and journals. PNAS, The Royal Society and OUP may attract authors with better access to funding for open access publications, and increased awareness for the open access movement.

When we looked into the chronological development of the percentage of open access articles in hybrid journals, we examined a relatively small time window of five years. The first big commercial publisher to introduce the hybrid option was Springer in 2004. Other publishers followed in the subsequent years, The Royal Society introduced EXiS Open Choice for all of its 7 titles in 2006. For both publishers the strongest growth occurred in the years 2006 and 2007, with the uptake slowing down in 2009. This might be for a variety of reasons and we can only list possible causes without knowing which ones the effect can really be attributed to. Reasons might be: hybrid offering grows faster than the demand in the market, recent growth of fully open access offerings attracts authors who seek open access, funders giving less incentive to use hybrid journals as an option for gold open access, publishers setting less emphasis on marketing the hybrid offering.

One additional aspect that became apparent during the analysis is the fact that some publishers convert toll access journals towards hybrid journals once they encounter demand for the open access publishing option in a particular journal. When, for example,

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<sup>19</sup> Source: The STM report - An overview of scientific and scholarly journals publishing. Mark Ware and Michael Mabe. September 2009. [http://www.stm-assoc.org/2009\\_10\\_13\\_MWC\\_STM\\_Report.pdf?PHPSESSID=dcd8480886aa0a262a4751e315910863](http://www.stm-assoc.org/2009_10_13_MWC_STM_Report.pdf?PHPSESSID=dcd8480886aa0a262a4751e315910863)

Elsevier's offering of hybrid titles was analyzed in September 2009, 40 titles were listed as having the "Sponsored Article" option. By February 2010, this number had grown to 51 titles.

## 5. ADDITIONAL ASPECTS OF OPEN ACCESS

### 5.1 INTRODUCTION

This chapter presents some additional aspects of open access, which complement, in a qualitative way, the previous quantitative analyses of open access journals and focus on points which emerged in need of some further discussion. The section starts with the profiles of the 14 large open access publishers, followed by a description of additional aggregation services in open access publishing, a section on the collaboration of learned societies with publishers and a short characterisation of the Living Reviews journals as an example of institutional open access publishing. The discourse then turns to the question of how open access publishing can be folded into augmented existing library activities, by describing the SCOAP<sup>3</sup> initiative and the licensing activities of the Max Planck Society. Finally, a closer look into copyright and licensing issues concludes the presentation of this additional material.

### 5.2 PROFILES OF THE 14 LARGE OPEN ACCESS PUBLISHERS

Chapter 3 identified a group of 14 large open access standing out because of the size of their operations, with either more than 50 open access journals or more than 1,000 open access articles a year. Their profiles are presented in the following.

#### 5.2.1 Academic Journals

Academic Journals<sup>20</sup> is an open access publisher in operation since 2002. The first open access journals they published was *African Journal of Biotechnology*. Since then they have increased their publications to what appears to be a portfolio of 107 newly founded journals. They serve primarily the biomedical sciences (63 journals) but also arts and social sciences (22 journals), physical science (18 journals), legal (1 journal) and other scientific field (4 journals). Upon acceptance of a paper, the authors are asked to transfer the copyrights to Academic Journals but the contents of the journal are then made available under the cc-by license.

They apply article processing charges (\$300-\$650) and their journals have advertising. For some journals, subscription to the print version is an additional offer at prices between \$350 and \$1,200 per journal.

The majority of the journals have their own webpage. However, some are currently made available via "Science Alert"<sup>21</sup>, a publishing platform for managing the submission process, peer review and archiving of the content.

One Academic Journals publication has been awarded an impact factor. More than 1,000 articles were published in all of Academic Journals publications during 2008.

#### 5.2.2 Asian Network for Scientific Information

Asian Network for Scientific Information (ANSInet)<sup>22</sup> was established in 1998 by a group of academicians. ANSInet is a professional publisher in the Asian Pacific region and currently publishes 32 journals primarily in the biomedical and life sciences fields.

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<sup>20</sup> <http://www.academicjournals.org/about.htm>

<sup>21</sup> <http://scialert.net/index.php>

The main source of income appears to be the subscription to the print version of the journal. However, there is no indication as to the subscription price.

The articles in the ANSI journals appear to be copyright of ANSInet

There are 13 ANSInet journals listed in the DOAJ and the analysis in chapter 3 counted more than 2500 articles published in the ANSInet journals during 2008.

### **5.2.3 Bentham Open**

Bentham Open is part of Bentham Science Publishers. In 2007 alone, they launched 200 open access journals. They currently publish over 250 journals in the science, technology and medical fields

Bentham Open journals operate by charging an article processing fee. Other income sources include membership offers and advertisement. The journals are indexed by Google and Google Scholar. The authors retain the copyrights of their work and Bentham Open makes the content of the journals available under the cc-by-nc license.

DOAJ currently indexes 155 Bentham Open journals. The analysis in chapter 3 counted around 1,700 articles published during 2008.

### **5.2.4 BioMed Central**

BioMed Central (BMC) is an open access publisher, currently publishing 207 open access journals in the science, technology and medical sciences. Journals allow the authors to retain the copyrights of their published research and making the content available to the readers under the cc-by license.

The journals charge an article processing charge in the range \$730-\$2,350. Other sources of income included membership, advertisement and hard copy sales. Waivers may also apply to some cases where lack of funding is evident or no article processing charges are incurred for promotional purposes or in the cases that the journal covers the costs of production.

The DOAJ lists 188 BMC journals, 12 of which appear to have ceased publications<sup>23</sup>. There are 35 BMC journals that have been awarded an impact factor. The analysis in chapter 3 counted more than 9,000 articles published in the 176 BMC journals during 2008.

### **5.2.5 Copernicus Publications**

Copernicus Publications is a publisher of open access journals, primarily in the earth and environmental sciences, physical sciences and technology. It was launched in 1994 as a non-profit limited liability corporation and has been publishing as an open access publisher since 2001. They currently publish 25 open access journals. Since 2007 they journals published on behalf of the European Geosciences Union (EGU) use a license equivalent to the creative commons attribution (cc-by).

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<sup>22</sup> www.ansinet.com

<sup>23</sup> Journals that appear to have ceased publication include journals that stopped publishing open access, changed publisher and/or changed title.

For 11 of their journals they have adopted a two-tier review process. The submitted papers undergo a rapid-access review by the editor and are then posted to an online discussion forum where they are subjected to community peer review (it can be both anonymous and attributed)<sup>24</sup>.

The journals charge an article processing fee based on the number of pages to cover the costs of peer review, typesetting, web publication and long term archiving<sup>25</sup>. These are often subsidized via co-publishing organizations such as foundations, societies, project funders. Other income sources applicable to some of the journals are subscription to the print version, print on demand and offprints sales.

DOAJ lists 20 Copernicus Journals, 2 of which appear to have ceased publications. There are 6 Copernicus Publications journals that have been awarded an impact factor. Over 2,000 articles were published in the 18 Copernicus journals during 2008.

### **5.2.6 Hindawi Publishing Corporation**

Hindawi Publishing Corporation was founded in 1997 as a commercial publisher aiming to serve a broad spectrum of academic disciplines, with a number of journals in collaboration with learned societies. In 2003 it began to experiment with open access publishing and by 2006 had converted to an entirely open access business model. In 2007, they entered into a publishing partnership with SAGE Publications. They publish more than 200 journals serving all subject disciplines under their own imprint and 26 in partnership with SAGE.

Income sources include the charge of article processing fees (\$275-\$1,500), subscription to the print journal and institutional memberships.

There are currently 89 journals listed in DOAJ. Eleven of those journals have been awarded an impact factor. Over 2,400 articles were published in all of the Hindawi journals during 2008<sup>26</sup>.

### **5.2.7 Indian Academy of Sciences**

The Indian Academy of Sciences was founded in 1934 with the aim of promoting the progress of pure and applied sciences<sup>27</sup>. It is a registered society and currently publishes 11 journals, 9 of which are made available outside India via a co-publishing agreement with Springer. Upon acceptance of a paper, authors are requested to transfer the copyrights to the Indian Academy of Sciences.

The journals operations are supported by income from subscriptions to their print versions. Some of the journals also accept advertisements. The Indian Academy of the Sciences handles all subscriptions to the journals for India while Springer has worldwide exclusive distribution rights for the enriched versions of these journals in electronic and print and licenses them to individuals and institutions. Figures regarding subscriptions to online and the print versions of the journals via the academy and Springer are available at the Indian Academy of Sciences annual report<sup>28</sup>.

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<sup>24</sup> <http://www.atmospheric-chemistry-and-physics.net/home.html>

<sup>25</sup> [http://publications.copernicus.org/for\\_authors/financial\\_support\\_for\\_authors.html](http://publications.copernicus.org/for_authors/financial_support_for_authors.html)

<sup>26</sup> 4 journals were launched on 2008 and 2009 and therefore were excluded from this count

<sup>27</sup> <http://www.ias.ac.in/>

<sup>28</sup> <http://www.ias.ac.in/academy/annreps/annrep2009.pdf>



There are currently 10 journals listed in DOAJ and nine of those journals have been awarded an impact factor. Over 1,100 articles were published in all of the Indian Academy of Sciences journals during 2008.

### **5.2.8 Internet Scientific Publications**

Internet Scientific Publications, L.L.C.<sup>29</sup> was launched in 1996. The website currently lists 77 journal titles all of which are focusing in medical science research. It appears that the Internet Scientific Publications rely heavily on advertising and sponsorship and started applying an article processing charge only after 2008<sup>30</sup>.

Internet Scientific Publications, L.L.C. requires that the copyright is transferred to the publisher, the content is then made available open access at the Internet Scientific Publications website.

The analysis in chapter 3 counted around 650 citable items published during 2008 in 62 journals listed in the DOAJ.

### **5.2.9 Medknow Publications and Media**

Medknow Publications and Media Pvt Ltd. is an open access publisher established in India. They currently publish 106 journals in the science, technology and medical sciences.

Upon acceptance, the authors transfer the copyrights to the journals. The content of the journals is then made available to the readers for non-commercial use under the cc-nc-sa license.

Medknow publications do not charge an article processing fee. The journals functional operation is supported via advertisement, sponsorship, and subscription to the print version of the journals and reprints sales.

DOAJ lists 61 Medknow journals. One journal has been awarded an impact factor More than 1,500 articles were published in 59<sup>31</sup> Medknow journals during 2008.

### **5.2.10 Optical Society of America**

The Optical Society of America (OSA) describes itself as a non-profit organization dedicated to the advancement of science and the increase of the knowledge of optics<sup>32</sup>. They currently publish 13 journals and are partners in the publication of another 7 journals. One journal is fully open access while for some of the other 19 journals the society offers various options for making the content openly available under the following schemes<sup>33</sup>:

- Page charges: offered as an option to authors of some journals; equivalent to the hybrid journals model

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29 <http://www.ispub.com/>

30 <http://www.ispub.com/instructions.html>

31 Two of the Medknow journals were launched during 2009 and therefore were excluded from the articles count.

32 <http://www.osa.org/aboutosa/default.aspx>

33 [http://www.opticsinfobase.org/submit/review/pub\\_charge.cfm](http://www.opticsinfobase.org/submit/review/pub_charge.cfm)

- Colour page charges: obligatory payment if the authors choose to include a colour page
- Fixed article processing charge: offered to authors of the current open access journal
- Voluntary page charge: offered to authors; equivalent to the hybrid journals model
- Optional page charge: offered to readers; the reader can sponsor an article that is regarded as deserving wider access.

Upon acceptance of the paper, the authors transfer the copyrights to the Optical Society of America. Optics Express, the only fully open access journal, has been awarded an impact factor and published almost 2,000 articles during 2008.

### 5.2.11 Oxford University Press

Oxford University Press (OUP) is a department of the University of Oxford. It publishes more than 200 journals, the majority in collaboration with learned societies. OUP has been experimenting with open access publishing since 2005 with the conversion of *Nucleic Acids Research (NAR)* from a subscription based to an open access journals<sup>34</sup>. They currently publish 6 full open access journals (in biomedical sciences and plant biology) and 91 hybrid journals<sup>35</sup>.

The six open access journals ask the authors to agree to a license to publish which is equivalent to the permissions of the cc-by-nc license. OUP uses various options for experimenting with income sources. Some of the journals charge an article processing fee, some offer discounts of the article processing fee if that is combined with membership. Also, there are waivers for authors from developing countries and one journal does not charge an article processing fee at all for the first year of publication – an offer which will be reviewed and perhaps revised in the future.

There are 2 OUP journals in the DOAJ directory. Both journals have been awarded an impact factor and published more than 1,000 citable items during 2008.

### 5.2.12 Public Library of Science

Public Library of Science (PLoS) describes itself as a non profit organization of scientists committed to making scientific and medical literature a world wide resource<sup>36</sup>. It was founded by biomedical scientists Harold E. Varmus, Patrick O. Brown, and Michael B. Eisen in 2000. It was launched in 2003 with a start up grant of \$9M from the Gordon and Betty Moore Foundation and since then it has received further financial support by various other foundations, organizations, universities and individuals.

They publish 7 journals in biomedical sciences, all of which are included in the DOAJ. In 2006 PLoS ONE was launched. PLoS ONE is an Open Access journal that accepts submissions from all scientific fields. Their operating costs are primarily covered by

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<sup>34</sup> OUP is currently publishing DNA Research on behalf of Kazusa DNA Research Institute which offers open access to the online version of the journal since 2000 when it first launched the online version of DNA Research. However, it is unclear whether the co-publication was in place since 2000 and therefore, we note that NAR was the first experimentation of OUP with a full open access journal.

<sup>35</sup> [http://www.oxfordjournals.org/oxfordopen/open\\_access\\_titles.html](http://www.oxfordjournals.org/oxfordopen/open_access_titles.html)

<sup>36</sup> <http://www.plos.org/about/index.php>

article processing charges. The article processing charge for PLoS ONE is significantly lower compared to the other PLoS journals (\$1,350 vs. \$1,450-\$2,950). Other income comes from membership schemes (both institutional and individual), interest & other income as well as advertising<sup>37</sup>. For two of the seven journals PLoS offers a subscription to the print version of the journal.

Five of the seven journals have been awarded an impact factor. More than 4,000 articles published in all of the PLoS journals during 2008.

### 5.2.13 The International Union of Crystallography

The International Union of Crystallography (IUCr) describes itself as a non-profit scientific union serving the world-wide interests of crystallographers and other scientists employing crystallographic methods. IUCr currently publishes 8 journals, one of which is open access: *Acta Crystallographica Section E: Structure Reports Online*. The journal publishes short articles and supplementary material. The archive dates back to 1948 and the contents of the journal are made available under the cc-by license.

*Acta Crystallographica Section E: Structure Reports Online* charges an article processing fee, currently set at \$150. The article processing charge as well as income from advertising supports the operations of the journal including the cost of peer review, of journal production, and of online hosting and archiving<sup>38</sup>. A policy for discounts and waivers is also in place. The journal has been awarded an impact factor and published more than 5,000 articles during 2008.

### 5.2.14 World Academy of Science, Engineering and Technology

World Academy of Science, Engineering and Technology (WASET)<sup>39</sup> operates since 2005 and publishes 32 open access journals in the natural and applied sciences (24 journals) but they also serve the biological and life sciences (4 journals) and the humanities and social sciences (3 journals). They also organise conferences. Although the policy of WASET is to require the authors to sign a copyright transfer form<sup>40</sup> the contents of the scientific journals are made available open access under the cc-by licence.

WASET does not appear to operate on an article processing charge. Authors are invited to submit their papers via two different routes: for consideration for presentation at a conference or for consideration for publication at a journal. No article processing fee is charged for a publication to a journal. It can be assumed that the journal and the conference organisation business models are interlinking in the covering of the publication costs.

There are 22 WASET journals in the DOAJ directory, two of which appear to have ceased publishing. The analysis in chapter 3 counted over 2,000 articles published in the WASET journals during 2008.

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37 [http://www.plos.org/downloads/progress\\_report.pdf](http://www.plos.org/downloads/progress_report.pdf)

38 [http://journals.iucr.org/services/oa/openaccess\\_e.html](http://journals.iucr.org/services/oa/openaccess_e.html)

39 <http://www.waset.org/>

40 <http://www.waset.org/downloads/copyright.doc>

### 5.3 AGGREGATION SERVICES AND COOPERATIVE PUBLISHING

Several platform offer open access articles from several journals in an aggregated way. Three of these emerged as particularly relevant during the analysis described in chapter 3, contributing information to more than 131 journals in total: ScIELO, J-Stage and Redalyc. Their common traits and individual profiles are discussed in the following.

Some of these initiatives have helped significantly the development of open access journals in emerging economies as they provide a single entry point for particular (language) groups. They offer readers information in many journals at the same time, browse by subject, and look for articles of the same author in different journals, etc. They also offer bibliometric information at the country, journals or institutions levels.

These platforms present an added value also for the publishers in the form more visibility to journals in search engines, which usually return more easily the aggregated version of a journal rather than the publisher version. Smaller (academic) publishers relying on these platforms can also access more powerful hardware facilities than they can have in their own institutions and access to bibliometrics indicators.

#### 5.3.1 SciELO

SciELO was set-up in 1997 in Brazil. Its focus is on "the development and evaluation of an adequate methodology for electronic publishing on the Internet". The SciELO network comprises 622 journals from 15 Spanish and Portuguese speaking countries with at total of over 240,000 open access articles. Recently, SciELO Brazil adopted the creative commons (CC) licensing model, with the minimum standard cc-by-nc license for all of its content<sup>41</sup>.

There are different SciELO collections divided by country. The versions for Argentina, Brazil, Chile, Colombia, Cuba, Spain, Portugal and Venezuela already exist, while the versions for Bolivia, Costa Rica, Mexico, Paraguay, Peru, South Africa and Uruguay are under development. In each of the countries hosting a SciELO collection, there is an organization which is responsible for its maintenance. For example, in Brazil it is BIREME (a World Health Organization institution), in Chile it is CONICYT (dependent of the Inter-ministerial Committee for Innovation) and in Spain it is the Instituto de Salud Carlos III (from the Science and Innovation Ministry). In all cases there is a public institution behind the SciELO national initiatives.

SciELO does not charge publishers of the journals for the services it offers. In order to be accepted, journals have to be evaluated and meet certain criteria: scientific character, peer-review, recurrence (minimum a new issue every three months), and some information in English language (title, abstract, keywords, etc.). Journals already indexed in databases such as Science Citation Index, MEDLINE/Index Medicus, PsycInfo or IBECS are automatically accepted.

#### 5.3.2 J-STAGE

J-Stage is a project funded in 1999 by the Japanese Ministry of Education, Culture, Sports, Science and Technology and operated by the Japan Science and Technology Agency). with the mission "to strive for acceleration and internationalization of science and technology information transmission and circulation by building on the Internet a uniform flow - from the submission to release of science and technology information".

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<sup>41</sup> <http://www.earlham.edu/~peters/fos/2009/11/scielo-adopts-cc-licenses.html>

More than 820 journal titles are available at J-Stage, with more than 1 million open access articles. J-Stage also includes non-OA journals and is linked to other reference sites, as ChemPort, CrossRef or PubMed. J-Stage is also engaged in the digitization of print journals by offering hardware and software tools to the journal publishers.

J-Stage offers support to the authors for articles submission as well as tools for the management of the journals such as:

- Support editing and judgement research papers and to manage the process
- Control the submission and reception functions of on-line research paper submission
- Assign editor and assessor, peer review result notifications
- Access electronic attachments data
- Broadcasts the information of a newly arrived paper and such to registered e-mail addresses
- Access statistics to academic societies by mail
- Automatically link papers based on references cited information

The analysis described in chapter 3 found a significant number of journals for which content is only available through J-Stage, whereby the official journal websites seem only to offer some information about the journal.

### 5.3.3 Redalyc

Redalyc<sup>42</sup> started in 2003 as a project of the Universidad Autónoma de Estado de México in Mexico. It is aimed at building a scientific information system comprising leading journals edited in and about Latin America. It counts 550 scientific journals with more than 120,000 open access articles. It was initially oriented towards Social Sciences journals, opening up later to natural and applied sciences. Its objectives include:

- Making available the full text of Latin American scientific journals, without technical or economic restrictions for the end user
- Quickly and easily identify emerging trends in a particular field of knowledge
- Establish contact with relevant authors in certain fields
- Enable communication between researchers, journals and their editors

In order to be accepted in Redalyc, journals have to meet a number of quality criteria: scientific content, regularity, access to past issues, author affiliation, original contents, metadata and others.. Redalyc offers services also to the journal editors. It has a service known as SEGE<sup>43</sup> to facilitate the management of the peer-review process. Journal managers can also consult a number of bibliometric indicators such as number of readers, number of articles, authors, internationalization of articles. Redalyc also offers

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42 Red de Revistas Científicas de América Latina y El Caribe, España y Portugal

43 Sistema de Gestión Editorial en Línea - Online Editorial Management System

a number of initiatives such as country and knowledge field portals to improve the communication processes. The platform also has communities for editors that act as social networks where journal managers can access training workshops, share awareness techniques or build subject peer-reviewers databases.

Redalyc contents are licensed under ccy-nc-nd 2.5 Mexico Creative Commons license.

#### 5.4 COLLABORATIONS OF LEARNED SOCIETIES WITH COMMERCIAL PUBLISHERS

One way for commercial publishers to experiment with open access is through partnerships with learned societies, whereby a commercial publisher takes responsibility for either distributing or publishing the journal on behalf of the learned society. Some notable examples, part of which emerged during the analysis of DOAJ titles described in chapter 3, are discussed in the following:

##### **BioMed Central in collaboration with various learned societies; (17 in DOAJ, 32 journals)**

BioMed Central currently publishes 32 journals in collaboration or on behalf of learned societies. All of the journals appear to follow the creative commons attribution license (cc-by) policy applied to all other BMC journals (see also 5.3.4) and the article processing fee is sponsored by the society or sponsored partially. The journals are listed below:

journal name	society	URL
Acta Veterinaria Scandinavica	Veterinary Associations of the Nordic Countries	<a href="http://www.actavetscand.com/">http://www.actavetscand.com/</a>
Allergy, Asthma & Clinical Immunology	Canadian Society of Allergy and Clinical Immunology	<a href="http://www.aacijournal.com/">http://www.aacijournal.com/</a>
Asia Pacific Family Medicine	World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians	<a href="http://www.apfmj.com/">http://www.apfmj.com/</a>
Biology of Sex Differences	Organization for the Study of Sex Differences	<a href="http://www.bsd-journal.com/">http://www.bsd-journal.com/</a>
BioPsychoSocial Medicine	Japanese Society of Psychosomatic Medicine	<a href="http://www.bpsmedicine.com/">http://www.bpsmedicine.com/</a>
Cell Communication and Signaling	Signal Transduction Society	<a href="http://www.biosignaling.com/">http://www.biosignaling.com/</a>
Chinese Medicine	International Society for Chinese Medicine	<a href="http://www.cmjournal.org/">http://www.cmjournal.org/</a>
Chiropractic & Osteopathy	Chiropractic & Osteopathic College of Australasia (COCA)	<a href="http://www.chiroandosteo.com/">http://www.chiroandosteo.com/</a>
Diabetology & Metabolic Syndrome	Brazilian Diabetes Society	<a href="http://www.dmsjournal.com/">http://www.dmsjournal.com/</a>
Frontiers in Zoology	Deutsche Zoologische Gesellschaft	<a href="http://www.frontiersinzooology.com/">http://www.frontiersinzooology.com/</a>
Geochemical Transactions	Geochemistry Division of the American Chemical Society	<a href="http://www.geochemicaltransactions.com/">http://www.geochemicaltransactions.com/</a>
Gut Pathogens	International Society for Genomic and Evolutionary Microbiology (ISOGEM)	<a href="http://www.gutpathogens.com/">http://www.gutpathogens.com/</a>
Head and Neck Oncology	Head & Neck Optical Diagnostics Society	<a href="http://www.headandneckoncology.org/">http://www.headandneckoncology.org/</a>
Hereditary Cancer in Clinical Practice	International Union against Cancer	<a href="http://www.hccpjournals.com/">http://www.hccpjournals.com/</a>
Immunome Research	International Immunomics Society	<a href="http://www.immunome-research.com/">http://www.immunome-research.com/</a>
International Journal for Equity in Health	International Society for Equity in Health	<a href="http://www.equityhealthj.com/">http://www.equityhealthj.com/</a>
International Journal of Behavioral Nutrition and Physical Activity	International Society for Behavioral Nutrition and Physical Activity (ISBNPA)	<a href="http://www.ijbnpa.org/">http://www.ijbnpa.org/</a>

Physical Activity		
Italian Journal of Pediatrics	Società Italiana di Pediatria	<a href="http://www.ijponline.net/">http://www.ijponline.net/</a>
Journal of Biological Engineering	Institute of Biological Engineering	<a href="http://www.jbioleng.org/">http://www.jbioleng.org/</a>
Journal of Cardiovascular Magnetic Resonance	Society for Cardiovascular Magnetic Resonance	<a href="http://jcmr-online.com/">http://jcmr-online.com/</a>
Journal of Foot & Ankle Research	Australasian Podiatry Council and Society of Chiropodists and Podiatrists (UK), jointly	<a href="http://www.jfootankleres.com/">http://www.jfootankleres.com/</a>
Journal of Inflammation	British Inflammation Research Association	<a href="http://www.journal-inflammation.com/">http://www.journal-inflammation.com/</a>
Journal of Orthopaedic Surgery & Research	The Chinese Speaking Orthopaedic Society	<a href="http://www.josr-online.com/">http://www.josr-online.com/</a>
Journal of the International AIDS Society	International AIDS Society	<a href="http://www.jiasociety.org/">http://www.jiasociety.org/</a>
Journal of the International Society of Sports Nutrition	International Society of Sports Nutrition	<a href="http://www.jissn.com/">http://www.jissn.com/</a>
Reproductive Health	Geneva Foundation for Medical Education and Research	<a href="http://www.reproductive-health-journal.com/">http://www.reproductive-health-journal.com/</a>
Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine	The Scandinavian Networking Group on Trauma and Emergency Management	<a href="http://www.sjtrem.com/">http://www.sjtrem.com/</a>
Scoliosis	Society on Scoliosis Orthopaedic and Rehabilitation Treatment	<a href="http://www.scoliosisjournal.com/">http://www.scoliosisjournal.com/</a>
Sports Medicine, Arthroscopy, Rehabilitation Therapy & Technology	Asia Pacific Orthopaedic Society for Sports Medicine	<a href="http://www.smarttjournal.com/">http://www.smarttjournal.com/</a>
Tobacco Induced Diseases	International Society for the Prevention of Tobacco Induced Diseases	<a href="http://www.tobaccoinduceddiseases.com/">http://www.tobaccoinduceddiseases.com/</a>
World Journal of Emergency Surgery	World Society of Emergency Surgery	<a href="http://www.wjes.org/">http://www.wjes.org/</a>

**Table 28: BMC journals in collaboration with learned societies**

## **IOP & National Institute of Materials Science**

The Institute of Physics Publishing publishes the open access journal *Science and Technology of Advanced Materials (STAM)*. It covers since 10 years research topics in the material sciences. The publication costs are sponsored by the National Institute of Materials Science. The contents of the journal are made available to access under cc-by-nc license.

## **Nature Publishing Group & European Molecular Biology Organization (EMBO)**

Nature Publishing Group publishes bi-annually *Molecular Systems Biology* on behalf of the European Molecular Biology Organisation since 2005. It has been awarded an impact factor and published 63 citable items during 2008.

There is an article processing charge depending on the published material: \$3000 for articles, \$800 for correspondence evaluated by reviewers and \$250 for correspondence that is not peer reviewed.

Articles published in *Molecular Systems Biology* are made available open access under the cc-by-nc or cc-by-nc-nd license at the author's choice.

## **Springer & Indian Academy of Sciences**

The DOAJ lists nine representing this collaboration. These are described in section 5.2.7. In addition, Springer publishes another set of open access journals with the following learned societies:

- Applied Geomatics. Official journal of the Società Italiana di Fotogrammetria e Topografia. The journal's content is open access since 2009 and the article processing fee is sponsored by the society.
- Journal of Orthopaedics and Traumatology. Official journal of the Società Italiana di Ortopedia e Traumatologia. The journal's content is open access since 2008 and the article processing fee is sponsored by the society.
- SERIEs - Journal of the Spanish Economic Association. Official journal of the Spanish Economic Association and Fundación. The journal is available open access since 2010 and article processing fees are sponsored by the society
- International Journal of Emergency Policy. Official journal of the Dutch Society of Emergency Physicians (NVSHA) or the American Academy for Emergency Medicine in India (AAEMI). There is an article processing fee \$1,250 that is waived if the publisher is a member of the societies.
- European Transport Research Review. The journal's content is open access since 2009 and articles processing charges are sponsored by the European Conference of Transport Research Institutes.
- Journal of Ophthalmic Inflammation and Infection. The official journal of the International Ocular Inflammation Society will start publishing in the course of 2010. Its fees are sponsored by the society.
- Strategies in Trauma and Limb Reconstruction. The journal is published since 2006 and article processing charges are sponsored by the OrthoFix company.

The content of these journals is made available under the cc-by-nc license.

## **Termedia Publishing**

Termedia Publishing is a commercial publisher in Poland. The DOAJ lists 4 journals published by Termedia Publishing in collaboration with or on behalf of learned societies:

- Folia Neuropathologica. Official journal of the Polish Association of Neuropathologists and the M. Mossakowski Medical Research Centre of the Polish Academy of Sciences
- Kardiologia polska. Polish Cardiac Society (This journal is no longer listed in the Termedia Publishing website)
- Neurologia i Neurochirurgia Polska. Official journal of Polish Society of Neurology and Polish Association of Neurological Surgeons



- Polish Journal of Cardio-Thoracic Surgery Official Journal of the Polish Society of Cardiothoracic Surgeons

The journals appear to be sustained via subscription to the print version of the journal and income from advertisements<sup>44</sup>.

## Wiley Blackwell

Wiley Blackwell publishes two journals which are open access on the society web site, even though they seem to be also available for purchase as part of the Wiley Blackwell commercial offering.

- American Epilepsy Society. *Epilepsy current* is a publication of the American Epilepsy Society. The contents of the journal (including the archive) are available at the society's webpage<sup>45</sup>. Wiley Blackwell offers a combination of subscriptions to either the online or the print version of the journal (or combinations thereafter, e.g. institutional online + print, individual online + print, individual online, etc.)<sup>46</sup>. There does not appear to apply an article processing charge. The copyrights appear to be transferred to the society.
- International Communication Association. *Journal of Computer Mediated Communication*. The journal is regarded amongst the first few Internet/Computing communications journals published during the mid 1990s with the intention of operating on an open access mode<sup>47</sup>. There is no print version of the journal and there is no article processing charge required for a paper to get published there. ICA membership includes access to all ICA journals. The journal also receives sponsorship from the University of Indiana.

## 5.4 INSTITUTIONAL OPEN ACCESS PUBLISHING: THE LIVING REVIEWS JOURNALS

Publishing activities of academic institutions are an interesting example of successful transition to open access publishing, as exemplified by the *Living Reviews* journals.

The Living Reviews family comprises five scientific, open access journals in the fields of relativity, solar physics, European governance, landscape research and democracy<sup>48</sup> which publish review articles solicited from experts in the field by an international editorial board. Articles are peer-reviewed and regularly updated after publication by their authors to incorporate the latest developments in the field.

The first Living Reviews journal, *Living Reviews in Relativity*, was launched in 1998 at the Max Planck Institute for Gravitational Physics. *Living Reviews in Solar Physics* followed in 2004 by the Max Planck Institute for Solar System Research. Since then three more journals appeared: *Living Reviews in European Governance* published by the European Community Studies Association Austria, *Living Reviews in Landscape Research* by the Leibniz-Centre for Agricultural Landscape Research, Müncheberg and

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<sup>44</sup> Example: *Folia Neuropathologica*. [http://www.termedia.pl/magazine.php?magazine\\_id=20&magazine\\_subpage=ABOUT](http://www.termedia.pl/magazine.php?magazine_id=20&magazine_subpage=ABOUT)

<sup>45</sup> <http://www.aesnet.org/go/publications/epilepsy-currents>

<sup>46</sup> <http://www.wiley.com/bw/subs.asp?ref=1535-7597&site=1>

<sup>47</sup> <http://jcmc.indiana.edu/aboutus.html>

<sup>48</sup> <http://www.livingreviews.org/>

*Living Reviews in Democracy* by the National Center of Competence in Research Democracy, Zurich.

The costs of the Living Review back office for running the two MPG journals are currently distributed between the Max Planck Institute for Gravitational Physics and the Max Planck Digital Library.

As of January 2010, the Living Reviews journals have produced the following publication record:

<b>start date</b>	<b>journal</b>	<b>reviews in total</b>	<b>of these are updates</b>
1998	LR Relativity	91	26
2004	LR Solar Physics	22	1
2006	LR European Government	14	2
2007	LR Landscape Research	9	--
2009	LR Democracy	7	--

**Table 29: Living Reviews publication record**

In the 12 months from February 2009 through January 2010 the following number of PDF downloads were recorded:

journal	total	average per month
LR Relativity	35,405	2,950
LR Solar Physics	8,606	717
LR European Government	4,710	393
LR Landscape Research	2,332	194
LR Democracy	n/a	n/a

**Table 30: Living Reviews PDF downloads Feb 2009 – Jan 2010**

Living Reviews in Relativity has been accepted for inclusion at the ISI-JCR during 2009.

## 5.5 CONSORTIUM APPROACH TO OA FUNDING: THE SCOAP<sup>3</sup> EXPERIMENT

The SCOAP3 initiative (sponsoring consortium for open access publishing in particle physics) aims to convert high-quality peer-reviewed High-Energy Physics (HEP) literature to Open Access. It will assist publishers to convert to open access the core HEP journals such as, but not limited to, *Physical Review D*, *Physics Letters B*, *Nuclear Physics B*, *Journal of High-Energy Physics* and *European Physical Journal C*, in addition to HEP content in other journals such as *Physical Review Letters* and *Nuclear Instrument and Methods B*.

The essence of this model<sup>49</sup> is the formation of a consortium to sponsor HEP publications and make them Open Access by redirecting funds that are currently used for subscriptions to HEP journals. Today, libraries purchase journal subscriptions to implicitly support peer-review and other editorial services in the field, allow their users to read articles, even though in HEP scientists mostly access their information by reading freely-available preprints on arXiv<sup>50</sup>. The SCOAP3 vision for tomorrow is that funding bodies and libraries worldwide federate in a consortium that will pay centrally for peer-review and other editorial services, through a re-direction of funds currently used for journal subscriptions, and, as a consequence, the final published versions of articles will be free to read for everyone. This evolution of the current “author-pays” open access models will make the transition to Open Access transparent for authors, who will not have to pay publications fees. In addition, it will not imply additional costs for libraries or research groups, as it is based on the redirection of current subscriptions.

In order to calculate the annual budget for the transition of HEP publishing to Open Access, the SCOAP3 Working Party considered several indicators: Most publishers quote a first-copy price in the range of 1,000–2,000 Euros per published article; the total number of HEP publications in high-quality journals is between 5,000 and 7,000, depending on the definition of the field. Therefore, the annual budget for the transition of HEP publishing to Open Access would amount to a maximum of 10 million Euros per year.

<sup>49</sup> Bianco, S. et al. Report of the SCOAP3 Working Party, <http://scoap3.org/files/Scoap3WPRReport.pdf> (2007). For further details on the SCOAP3 initiative: <http://scoap3.org>

<sup>50</sup> Gentil-Beccot, A., Mele, S. and Brooks, T. Citing and Reading Behaviours in High-Energy Physics. How a Community Stopped Worrying about Journals and Learned to Love Repositories, to appear in *Scientometrics*: arXiv:0906.5418

The costs of SCOAP3 will be distributed among all countries according to a fair share model, based on the distribution of HEP articles published per country. At the time of writing SCOAP3 had received pledges for around 70% of its budget envelope from partners in 24 countries<sup>51</sup>.

## **5.6 INSTITUTIONAL APPROACHES TO OPEN ACCESS LICENSING: THE CASE OF THE MAX PLANCK SOCIETY**

Open access publishing pose significant institutional challenges and require as much change for academic institutions as do for publishers. Prevailing open access publishing models shift and bringing together costs from two spheres which are typically distinct and under different management and operational principles in academic institutions. Subscription costs are a constitutional element of the libraries and their budgets, while publication costs – if covered by the institution – are covered from research budgets or grants. The sometimes reluctant and symbolic uptake of open access models by university libraries suggests that those re-organisations are still, at best, in their nascent stage. Therefore it is an issue for the governance bodies of an institution to establish clear policy rules, to define goals and responsibilities, to review the internal budgeting, steering and controlling mechanisms, and to establish new workflows.

The 80 research institutes of the Max Planck Society employ a total of approximately 13,300 staff, of which 4,800 are researchers. The founding of the Max Planck Digital Library (MPDL) in 2007 signifies the understanding by the Max Planck Society of the fundamental changes in scholarly communication and of the commitment to play a proactive role. The MPDL's role is to facilitate optimal access to scientific information for the Max Planck Society's scientists, to provide a sustainable infrastructure for the management of scientific information and to support the society in its open access activities.

The Max Planck Society is fully committed to open access as the initiator and organizer of the international conference in Berlin in October 2003, which resulted in the joint signature of the "Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities" by all German Research Organisations. The Max Planck Society is interested in ultimately shifting the costs from the reader side (paying for subscriptions) to the author side (paying for publications), and thus in liberating the research output from commercial and legal constraints, by making them freely available to the scientific community and the society at large. The subscription as well as the publication habits of the Max Planck Society have been analyzed thoroughly enough to know that even a full-fledged swing to open access funding models could be managed without financial disruptions.

As early as 2005, the Max Planck Society has taken the decision (along with making the budgetary provisions) that subscription costs as well as publication costs are to be paid from a unified budget, which is overseen by the MPDL. This is in the position to negotiate, administer and monitor both subscription content licenses and open access publication charge agreements. The risk of paying twice for content and open access fees, a big issue in the open access debate, is mitigated before it even occurs. Within this framework the MPDL has concluded a series of central society-wide publication cost agreements with open access publishers:

- Biomed Central since 2004

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<sup>51</sup> <http://scoap3.org/fundraising.html>

- New Journal of Physics (German Physical Society/Institute of Physics Publishing) since 2006
- Copernicus (European Geophysical Society) since January 2008
- Public Library of Science since July 2008

Some of these were the first world wide centralized institutional agreements. In addition, the Max Planck Society is supporting community initiatives such as Bioline and was engaged in a pilot agreement with Springer combining the subscription model with Open Choice in 2008 and 2009. The Max Planck Society has also been a very active partner in the SCOAP<sup>3</sup> initiative from the very beginning.

year	BioMed Central	IOP/ New Journal of Physics	Copernicus	PLOS	Springer	total
2006	35	23		12		47
2007	48	24		16		88
2008	39	83	49	46	575	792
2009	55	68	73	49	656	901

**Table 31: Number of open access journal articles by Max Planck Society authors**

The results of such agreements are presented in Table 31. About 10% of the typical annual research output of the Max Planck Society of 9,000 journal articles could be made open access in 2009.

This large-scale institutional experience demonstrates that substantial fraction of research output can only be published open access if the larger publishers with their journal fleets provide attractive models. As a corollary, the hybrid models, in this respect, seems to be an important and necessary transition model allowing for a start in the traditional subscription mode and promising an end in the publication cost logic.

## 5.7 COPYRIGHT AND LICENSING

Copyright is a form of intellectual property with slightly different definitions across different legislations. In general, the copyright gives the author of an original work exclusive right in relation to that work, including publication, distribution and adaptation for a certain period of time.

In traditional academic publishing, the author has usually been required to transfer the copyright of their article to the publisher with a special copyright transfer agreement (CTA), or, more recently, grant a perpetual exclusive licence. The authors always maintain some moral rights, notably that of being properly and fully acknowledged as authors, which is crucial in scholarly communication.

The technological development and the onset of the open access debate have challenged the copyright transfer models by offering many alternatives for dissemination of scientific articles through self-publishing and self-archiving on personal or institutional systems. Traditional publishing and CTA agreements do not allow this kind of distributions, and in many cases have been amended in recent years, i.e. allowing several forms of dissemination of the author's version (i.e. pre-published version).

These developments have lead to new models of copyright arrangement. A dominant new practice is creative commons (CC) licensing where authors retain some rights and allow

others to reuse and distribute their original work. The degree of rights maintained and released rights may vary according to the author and/or the policy of the journal in which an article is published. Creative commons licenses include four conditions to choose from (attribution, share alike, no derivatives and no commercial). The main six licenses are combinations of these conditions, where the attribution (the author's right to be acknowledged) is included in every license.

Previously, three copyright models in open access journals have been distinguished: the author keeps the copyrights, shares them with the publisher (with CC licenses) or the author transfers only the exploitation rights<sup>52</sup>. In the data analysis discussed in chapter 3, two other options were often encountered: copyrights were not mentioned at all in the journal web pages, or there was some other kind of arrangement. Table 32 summarises these options.

It is notable that, even if the copyrights were mostly maintained by the author or shared (CC license or some other arrangement), the publisher usually reserved the right to first publishing and the right to be mentioned as the first publisher. This means that the authors are free to publish their work later, for example on their personal web page or even in another publication (independent of the form of publication) as long as the first publisher is mentioned.

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<sup>52</sup> Hoom, E. and Maurits van der Graaf (2006). Copyright issues in open access research journals: the authors' perspective. *D-Lib Magazine*, Vol. 12 (2). DOI:10.1045/february2006-vandergaaf

copyright	creative commons	some other arrangement	no copyright issues mentioned
Most likely in traditional publishing: the author transfers their right to the publisher, most often by signing a copyright agreement or copyright transfer form.	Different types of CC licenses. The rights of the author vary from “by” (the right to be acknowledged accordingly) to “by-nc-nd” (no commercial reuse, no derivatives).	CC license is not used or mentioned but the intention is the same: author maintains all or most of the copyrights. In this case, the publisher often retains the right to first publishing and the right to be mentioned as the first publisher.  OR  In between the previous models: the copyrights are somehow shared between the author and the publisher. This may include, for example, according to the author the right to publish his work on a personal web page or reuse it in his following work.	The copyright issue is left open or no information concerning the copyrights can be found on the journal or publisher website.

**Table 32: Copyright arrangements in open access journals**

Irrespective of whether the journal opts copyright or CC license, the authors are usually asked to sign an agreement indicating if the copyrights will be transferred or not. However, it was noted that in some cases, the copyright statement was understood in a different way: to state that the author has the copyright of the article they intend to publish.

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## GLOSSARY

acadj	Academic Journals – Publisher short code used in the DOAJ study
ANSInet	Asian Network for Scientific Information – Publisher short code used in the DOAJ study
bentham	Bentham Open – Publisher short code used in the DOAJ study
bio	Biology and Life Sciences – Category used in the DOAJ study
BMC	BioMed Central
CC	Creative Commons
cc by-nc-nd	Attribution-Non-Commercial No Derivatives
cc by-nc-sa	Attribution Non-Commercial Share Alike
cc by-nc	Attribution Non-Commercial
cc by-nd	Attribution No Derivatives
cc by-sa	Attribution Share Alike
cc-by	Attribution
Copernicus	Copernicus Publications – Publisher short code used in the DOAJ study
cpt	Chemistry, Physics and Technology – Category used in the DOAJ study
DOAJ	Directory of Open Access Journals
EZB	The Electronic Journals Library
gen	General Works – Category used in the DOAJ study
hindawi	Hindawi Publishing Corporation
hum	Humanities – Category used in the DOAJ study
ispub	Internet Scientific Publications – Publisher short code used in the DOAJ study
ISI-JCR	Journal Citation Reports
ISSN	International Standard Serial Number
iucr	International Union of Crystallography – Publisher short code used in the DOAJ study
J-Stage	Japan Science and Technology Information Aggregator, Electronic
ias	Indian Academy of Sciences – Publisher short code used in the DOAJ study
IUCr	The International Institute of Crystallography – Publisher short code used in the DOAJ study
med	Health Sciences – Category used in the DOAJ study
medknow	Medknow Publications – Publisher short code used in the DOAJ study
OAI-PMH	Open Archives Initiative – Protocol for Metadata Harvesting
OSA	Optical Society of America – Publisher short code used in the DOAJ study
oup	Oxford University Press – Publisher short code used in the DOAJ study
PLoS	Public Library of Science
SCImago	SCImago Journal & Country Rank
STM	Science Technology and Medicine – Subjects of journals
Redalyc	Red de Revistas Científicas de América Latina y el Caribe, España y Portugal
ScIELO	Scientific Electronic Library Online
soc	Social Sciences – Category used in the DOAJ study
WASET	World Academy of Science, Engineering and Technology – Publisher short code used in the DOAJ study
WP	Work Package

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