

Grades, Subject Groups, and Article Volume

The average OA journal published 57 articles in 2013 and charged \$630 for each of them. That's obvious nonsense. So is this slightly refined pair: the average fee-charging journal published 107 articles and charged \$1,045 for each one, while the average free journal published 31 articles (and charged nothing).

There's no such thing as an average journal, of course, any more than there's any such thing as an average library. How close can you come? Two fee-charging journals—both in Biomed—published 107 articles in 2013 and charged \$800 and \$738 respectively; 35 journals published 57 articles, 3 of those journals—two in STEM and one in Biomed—charging \$600; 68 journals published 31 articles each, and 37 of those didn't charge fees.

Breaking journals down into various subgroups may help clarify the picture.

Grades

I am in no position to judge whether a journal meets the highest standards, especially in any field other than librarianship. Neither is anyone else in much more than their own discipline. So I'm not in a position to assign grades that are meaningful in that sense.

But it *is* reasonable to assign rough grades based on the visible nature of a journal's site: not whether a journal is guaranteed to be good, but whether there are signs that it's troublesome. I first assigned grades when looking at Beall's-list journals (most of which aren't actually journals) in the July 2014 *Cites & Insights*. I've carried those grades—slightly refined—over to this study. These are rough groupings and in no way override deeper investigation and common sense. If you've received e-mail inviting articles from

a journal wholly outside your field, or one promising two-day turnaround for refereeing, or if a scholar skims half a dozen articles in a journal and finds one or two of them to be fringe or nonsense, that journal is a C: to be avoided. The roughness of these grades is one of several reasons I normally don't name journals or publishers in this report.

What are the grades and how are they defined?

- **A—Apparently good:** Nothing on the journal site raised red or yellow flags—and if there was a fee, it was clearly stated and not over \$999.
- **A\$—Good but pricey:** No apparent issues, but the APC is \$1,000 or more.
- **B—May need investigation:** While the journal may be great, there was *something* about it that suggested an author might want to find out more, such as poor quality English in the interface or misleading (but not clearly false) claims or journal titles.
- **C—Highly questionable:** These journals have serious problems, and I believe most scholars and librarians would and should pass them by. I consider them red-flagged as compared to the yellow flag of B journals. Within DOAJ, the majority of C journals (61 percent) are assigned that grade because they almost certainly have APCs or other fees but don't say what they are. Other journals include clearly false statements by the publisher, boast such questionable things as two-day turnaround for peer review, or otherwise seem like scams. Note that only 294 of the 6,490 journals—less than 5 percent—fall into this category.
- **D—Dormant, diminutive, dying, or dead:** This group, which includes more than 1,000 journals, is complicated, as it includes several subcategories,

Table 2.1. Journals and articles by grade

Grade	Journals	% J	Articles	% A	A/J
A	3,976	61%	177,077	48%	45
Free	3,210	81%	114,094	64%	36
Pay	766	19%	62,983	36%	82
A\$	580	9%	113,574	31%	196
Pay	580	100%	113,574	100%	196
B	567	9%	40,273	11%	71
Free	213	38%	8,419	21%	40
Pay	354	62%	31,854	79%	90
C	294	5%	25,284	7%	86
Free	17	6%	846	3%	50
Pay	100	34%	9,545	38%	95
Unknown	177	60%	14,893	59%	84
D	1,073	17%	10,002	3%	9
Free	790	74%	6,959	70%	9
Pay	264	25%	2,832	28%	11
Unknown	19	2%	211	2%	11

some of which are in this group because new *DOAJ* criteria mean that these journals may disappear from *DOAJ*. Note that *D* journals may be very high quality but require special attention if only because of their publishing patterns.

Here are the subcategories within *D*:

- **C—Ceased:** These 263 journals have either been explicitly canceled or merged with other journals (96 in all) or have had no articles appearing after 2012.
- **D—Dying:** These 93 journals show publication patterns that suggest they're on the verge of stopping publication. As a group, these journals published 1,226 articles in 2011; 1,299 in 2012; 533 in 2013—and 83 in the first half of 2014.
- **E—Erratic:** These 182 journals sometimes publish fewer than five articles in a year (the cutoff for *DOAJ* in the future) but publish many more in other years.
- **H—Hiatus:** These 145 journals didn't have any articles in the first half of 2014 (except for one or two that were *explicitly* on hiatus in late 2014) but have earlier publication patterns that suggest they're not dying but need editorial attention.
- **N—New:** These 16 journals either had a handful of articles in 2013 but none or one in the first half of 2014 or had exactly one in the first half of 2014 and none in earlier years.
- **S—Small:** The largest and in some ways the most interesting and confounding subcategory. These 374 journals have not published more than nine

articles in any year later than 2010 and have published fewer than five in some years. Some of these are clearly niche journals, in fields so narrow (e.g., the works of a single philosopher) that four articles a year is a good showing; others just aren't making it as journals.

There's nothing inherently wrong with these journals—and I've suggested to *DOAJ* that the five-article requirement may not be entirely appropriate. As I suggested to them, "Maybe there's a need for a *Directory of Small Open Access Journals?*"

Table 2.1 shows the number of journals in each grade or group, the number of articles in those journals in 2013, and some related figures. The table may require a little explanation. % J and % A for grade/group lines (*A–D*) are the percentage of *all* journals or 2013 articles in that grade; for Free, Pay (that is, having APCs or other fees), and Unknown lines within a grade, they are the percentage of journals or articles for journals with that status. A/J is the average 2013 articles per journal.

It's good that *C* includes only 5 percent of the journals and 7 percent of the articles (see chapter 6 for a very different situation) and unsurprising that almost none of the *C* journals and articles are free. I find it encouraging that more than 60 percent of the journals in Table 2.1 had nothing obviously wrong with them and did *not* charge very high fees, even if those journals include slightly less than half of all OA articles in 2013.

The articles-per-journal breakdowns also follow predictable patterns: fee-charging journals tend to

Table 2.2. Journals and articles by area and grade

Area	Journals	% J	Articles	% A	A/J
Mega	4	0%	36,673	10%	9,168
A\$	4	100%	36,673	100%	9,168
Biomed	2,038	31%	128,035	35%	63
A	1,082	53%	59,890	47%	55
A\$	444	22%	48,422	38%	109
B	114	6%	7,793	6%	68
C	130	6%	9,094	7%	70
D	268	13%	2,836	2%	11
STEM	2,157	33%	141,224	39%	65
A	1,328	62%	73,336	52%	55
A\$	113	5%	26,758	19%	237
B	288	13%	25,448	18%	88
C	124	6%	11,392	8%	92
D	304	14%	4,290	3%	14
HSS	2,204	34%	52,903	14%	24
A	1,515	69%	40,966	77%	27
A\$	17	1%	1,647	3%	97
B	156	7%	5,993	11%	38
C	31	1%	1,530	3%	49
D	485	22%	2,767	5%	6
Misc	87	1%	7,375	2%	85
A	51	59%	2,885	39%	57
A\$	2	2%	74	1%	37
B	9	10%	1,039	14%	115
C	9	10%	3,268	44%	363
D	16	18%	109	1%	7

publish a lot more articles than free journals, with the odd mix of *D* journals an exception.

In Table 2.2, % J and % A for area lines are the percentage of all journals and articles; those for grade lines are the percentage of journals and articles within that area—not the percentage of free journals or articles.

Subject Groups

While the three broad subject areas clarify some of the biggest differences among OA journals, they're very broad areas. Chapter 5 looks at journals split by some two dozen subjects for a few key measures, but that level of detail can be exhausting.

The subject groups discussed here—assigned, as are the chapter 5 subjects, on *DOAJ* subjects (and my own judgment)—may be a middle ground. Table 2.3 shows journals and articles for each group over four time periods: 2011, 2012, 2013, and the first half of

2014. The first line for each group shows journals that published at least one article during each period and the number of articles; the second shows the percentage of journals publishing in that year that are free to authors and the percentage of articles from those journals. Note that, while the article count for 2013 is the same as elsewhere, the journal count is lower (6,225 rather than 6,490). That's because other counts include *all* journals studied, some of which didn't publish articles in a given year. The lower journal count for 2014 is misleading: some OA journals post articles only once or twice each year and simply don't show up in the first half of the year.

A few brief notes on the subject groups and some of the more interesting figures in Table 2.3 follow, noting that the groups are in order by broad subject area (Biomed for the first two, STEM for the next four, HSS for the next two), with the two special groups following. Since all four megajournals charge fees, there's no *Free* line for **Mega**.

Table 2.3. Subject groups

Group	Journals				Articles			
	2014 (Jan–June)	2013	2012	2011	2014*	2013	2012	2011
Biology	303	331	314	282	14,938	24,127	22,999	20,738
Free	37%	37%	38%	38%	19%	24%	23%	23%
Medicine	1,562	1,665	1,586	1,454	55,522	103,908	92,596	77,655
Free	48%	49%	49%	50%	33%	36%	40%	43%
Earth & Life	694	804	783	728	19,758	41,865	40,213	35,053
Free	59%	60%	61%	62%	39%	42%	42%	46%
Eng. & Tech.	334	371	348	294	15,985	29,024	22,365	14,939
Free	56%	57%	58%	60%	32%	34%	36%	49%
Math & Comp.	475	548	522	463	20,122	36,471	32,945	22,787
Free	60%	62%	63%	65%	26%	30%	31%	35%
Science	328	364	340	295	18,547	33,864	29,919	25,614
Free	53%	55%	54%	53%	23%	27%	29%	29%
Humanities	516	718	735	693	7,413	16,320	15,862	13,838
Free	93%	94%	95%	95%	75%	78%	81%	83%
Social Sciences	1,075	1,338	1,318	1,193	17,442	36,583	36,162	30,543
Free	81%	83%	84%	85%	59%	67%	68%	72%
Mega	4	4	4	4	21,168	36,673	26,512	15,523
Miscellany	67	82	75	58	5,385	7,375	5,788	2,585
Free	63%	67%	69%	74%	27%	38%	46%	71%
Total	5,348	6,225	6,025	5,464	196,280	366,210	325,361	259,275
Free	62%	64%	65%	67%	31%	36%	39%	43%

- **Biology:** This group, including all aspects of human biology, has the lowest percentage of free journals and articles of any subject group, but neither the percentages nor the volume have changed much since 2011—in contrast to the situation for non-DOAJ journals (see chapter 6).
- **Medicine:** This group, including all aspects of human medicine, has the most journals and the most articles of any group, and also the largest gain in *number* of journals from 2011 to 2013 (but not the largest percentage gain). While the percentage of free journals hasn't changed much (almost exactly half the journals), the percentage of articles published in free journals has dropped considerably while the number of articles grew by a third.
- **Earth and Life Sciences:** This group includes agriculture (and allied sciences), ecology and environmental topics, earth sciences (including geology and geography), and zoology (including veterinary medicine). This group has the second-highest percentage of free journals within the STEM area (around 60 percent) and the highest percentage of free articles within that area (more than 40 percent), with relatively little change in either percentage and only moderate growth.
- **Engineering and Technology:** Journals publishing articles grew by more than a quarter from 2011—but articles nearly doubled and seem likely to continue growing. The percentage of free journals declined only slightly, but the percentage of articles in those journals dropped substantially, from nearly half in 2011 to just over one-third in 2013; most article growth was in fee-charging journals.
- **Math and Computing:** This group, with modest growth in journals but fairly rapid growth in articles (60 percent more in 2013 than in 2011), is a little paradoxical: it has the highest percentage of free journals of any STEM area (more than 60 percent) and the second-lowest percentage of free articles (dropping from 35 percent to 30 percent).
- **Science:** This group includes chemistry, physics, “science” (usually multidisciplinary), and other hard-science areas not already mentioned. Most journals don't charge APCs—but the percentage of articles in free journals dropped to not much more than one-quarter by 2013, the lowest figure for any group other than Biology.
- **Humanities:** This group, including art and architecture, history, language and literature, media and communications, philosophy, and religion, is

Table 2.4. Journals by article volume

Peak	Journals	No-Fee %	Articles	No-Fee %
1,000+	26	8%	69,981	3%
600–999	47	11%	36,357	10%
400–599	59	12%	28,565	12%
200–399	230	25%	61,994	24%
100–199	496	41%	67,790	40%
60–99	707	50%	53,304	50%
35–59	1,145	63%	51,809	62%
20–34	1,520	74%	39,761	73%
1–20	2,260	78%	25,623	79%

slow-growing and continues to be predominantly free, with more than nine out of ten journals and at least three-quarters of articles *not* involving fees.

- **Social Sciences:** This group, including anthropology, economics and business, law, library science, political science, psychology, and sociology, includes the second-largest number of journals but the fourth-largest number of articles. Free journals (more than four out of five) and articles (at least two-thirds) also dominate here, but not as heavily as in Humanities.
- **Megajournals:** No change in the number of journals but *huge* growth in articles, with considerably more than twice as many articles in 2013 as in 2011, and every likelihood that 2014 will also show a (much smaller) jump. In one sense, there's only one true megajournal: *PLOS ONE* published more than 12 times as many articles in 2013 as the next most voluminous megajournal, *Scientific Reports*.
- **Miscellany:** So few journals and articles, with such a broad range of coverage, that no commentary is particularly useful.

Is it coincidental that the 2011 and 2013 percentages of articles from free journals are identical for Medicine and for the total field? Not entirely: Medicine is the largest area, with considerably more than a quarter of all articles.

Article Volume

You already know that journals (of whatever sort) vary widely in terms of article volume—all the way from annuals with a tiny handful of papers to weeklies with enormous quantities. Many online journals dispense with issues as such, offering a continuous stream of

Table 2.5. Journals by article volume for subject areas

Peak	Biomed	STEM	HSS
1,000+	7	12	3
Free	14%	0%	33%
200–999	137	164	25
Free	19%	21%	28%
60–199	556	477	159
Free	43%	47%	55%
20–59	888	903	845
Free	41%	30%	87%
1–19	450	601	1,172
Free	47%	72%	93%

articles instead, but the ones I could evaluate at least make it possible to break down articles by year.

Table 2.4 shows the distribution of journals by peak volume (the year or half-year in which the largest number of articles appeared) and the number of 2013 articles in those journals—and the percentage of journals and articles that don't involve charges.

The significance of table 2.4 seems fairly clear. Most journals don't publish many articles, and the lower the volume, the more likely the journal is to be free. *Within* a size range (and apart from very high volume journals), free journals seem to publish roughly the same number of articles as paid journals: the two **No-Fee %** numbers are typically no more than 1 percent apart.

Table 2.5 uses a simplified set of peak volume ranges and shows the number of journals and percentage of free journals for each of the three broad areas. Note that less than half of Biomed journals are free at *any* article volume level, even though sparse journals come close—and that even in Humanities and Social Sciences, a majority of large and very large journals have fees. In STEM, free journals are in the majority only among sparse journals (those with fewer than 20 articles per year). Most sparse journals are in Humanities and Social Sciences; that may not be surprising.

These results (in tables 2.4 and 2.5) suggest a dis-economy of scale: it's much harder to maintain a high-volume journal with high standards without fees. Table 2.5 may suggest either that it's harder to maintain such a journal in Biomed and STEM or, reversing the correlation, that these fields are far more likely to have money available to pay APCs. I suspect both may be partly true.

A breakdown of article volume by the eight finer subject areas does not show particularly interesting differences from table 2.5 and is therefore omitted.

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