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An Exploratory Survey of the Suspicious Open Access Journals

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Abstract

This paper describes the results of a survey of possibly predatory open access journals. Based on Jeffrey Beall's compilations of predatory publishers and standalone journals, the study identified 891 publishers and 7,726 journals with content at the end of January 2015, of which 1,989 journals were published by twelve mega publishers that had published over one hundred journal titles. The distributions of all journals versus journals from the mega publishers by paper quantity, journal debut year/journal age, and subject were systematically examined and compared. It was found that, at the time of this study, nearly half of the publishers had only one non-empty journal. Nearly 2/3 of the 7,726 non-empty journals had published only 50 or less papers, and half of them were debuted within two years. As high as 90% of the journals targeted science, technology, and medicine (STM), and the three domains had roughly equal shares of the journals. A sample of 11,419 articles was further drawn from the journals with more than 100 papers and those with 10 or less papers. The analysis of the first authors showed that India, United States and Nigeria were the top three contributors to suspicious journals; they together constituted approximately 50% of the sample.

Keywords: Open Access Journals; Predatory Publishing; Scholarly Communication

1. Introduction

In the late 1990s, open access (OA) journals emerged in response to the serials crisis (Poynder, 2004). The 2002 Budapest Open Access Initiative (BOAI) encouraged journal publishers to seek alternative means to fund publishing costs rather than charging users subscription fees or access fees (Budapest Open Access Initiative [BOAI], 2002). After that, the author-fee or author-pay model has become a major cost recovery method for OA publishers.

However, the shift from subscription-fee to author-fee model created a financial relationship between the authors and publishers. It also led to unexpected and undesired consequence, i.e., predatory OA publishing. Predatory OA publisher is a term coined by Jeffrey Beall, an associate professor and librarian at the University of Colorado—Denver. It refers to commercial OA publishers that take advantage of the author-fee model and publish to make money rather than to advance scholarly communication. These publishers usually have controversial and unethical publishing practices. For examples, many predatory publishers have deceptive and misleading journal information on their websites. They may provide obscure or fake publisher and editor information. Peer review of the manuscripts can be superficial or may not be performed at all. Editing quality can be unprofessional and poor. Some publishers have ignored requests from scholars who wish to withdraw themselves from

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their editorial boards. And authors have had papers forcibly published regardless of their requests to withdraw the submissions (Beall, 2012a, 2012b; Stratford, 2012).

The quality of papers published in the possibly predatory journals is also questionable (Bohannon, 2013). It is not to say that all papers appearing in those journals are "bogus science." Some authors may unknowingly submit their well-designed and well-executed research to a predatory journal. However, due to those journals' profit-making nature, quality work can collocate with poor papers accepted without appropriate juried reviews. Numerous incidents of unethical publishing practices were reported in Beall's blog entitled "Scholarly Open Access" between 2009 and 2016 (it closed in January 2017). Papers published by suspicious OA publishers not only constitute a problem for scholarly communication but also a threat to higher education. As many students now search only the Internet for scholarly works, those openly accessible questionable journals can be detrimental to students and novice researchers who may lack sufficient subject expertise and training to distinguish between good and bad research.

It is important to know how many questionable journals exist in the world and to what extent predatory publishing has impeded scholarly communication and academic research. However, a fundamental problem is the lack of reliable methods to differentiate predatory from ethical publishers. No objective indicator to identify predatory publishers exists. Unethical publishing behaviours usually occur behind the scenes. The intention to exploit usually surfaces only in the transactions between the predatory publishers and the authors. This study aims to provide a comprehensive survey of the predatory publishers and their publications. It thus employs Jeffrey Beall's somewhat controversial directory, the *Potential, Possible, or Probable Predatory Scholarly Open-Access Publishers* (Beall's List), as the basis for the survey.

Beall's List, which was terminated unexpectedly in January 2017 (Retraction Watch, 2017), contained two subsets—the *List of Publishers* and the *List of Standalone Journals* (Beall, 2017a, 2017b). Over the last few years, scholarly communities relied on Beall's List to stay alert. However, many scholars disagreed on Beall's inclusion of certain publishers. For this study, Beall's List was the only available tool for exploring the negative phenomenon. Between October 2014, and January 2015, the researcher conducted a comprehensive survey based on the two sub-lists. This paper reports on the survey findings, including the quantities of suspicious publishers and journals as well as the distributions of the journals by their paper quantity, journal age, and subject topic. This researcher also drew a large sample of papers from the journals to observe the geographic distribution of authors contributing to those journals. It is to date the first study that provides precise and real-time description of predatory OA publishing based on a comprehensive survey rather than on sampling and estimation.

2. Beall's List

Jeffrey Beall coined the term "predatory publishing" in 2009 and began to publicize suspicious publishers on the Internet. Prior to the launch of his well-known *Scholarly Open Access* (SOA) in 2012 (Beall, 2017c), he had released a list that contained approximately twenty suspicious publishers. In 2012 he began to publish Beall's List on SOA. Since then he regularly updated the lists of suspicious publishers and standalone journals until it came to a sudden end in January 2017. Aside from this list he also started another two lists in 2014, *Journals with Misleading Metrics* and *Hijacked Journals* (Beall, 2017d, 2017e).

According to Beall, inclusion of journals in Beall's List was based on a set of criteria. The criteria were the qualifications and performance of the editors and staff, the publisher's integrity and ethical behavior in its business management, and the evidence of poor journal standards and/or unethical practices. Before the termination of SOA, Beall released three editions of his evaluation criteria in which he acknowledged the principles of professional conduct and transparent scholarly publishing issued by the Committee on Publication Ethics (COPE) (Beall, 2015). There was also an appeal mechanism for publishers who thought they should not have been included. The appeal was sent to an advisory board of four members, and the board reviewed the appellant's website and evidence of its business operations to determine whether it would be removed or kept on Beall's List (Beall, 2013).

Beall's List was controversial in many ways. Some people challenged Beall's standards and described his action as a frantic "witch hunt" (Fabre, 2016). Others disagreed on the inclusion of certain publishers and considered the labeling of predatory publishers particularly detrimental to nascent OA journals or OA journals published in developing countries (Berger & Cirasella, 2015; Butler, 2013). A few publishers openly threatened to sue Beall for including their names in Beall's List (Flaherty, 2013; Jack, 2012; New, 2013). Beall was also criticized by many OA advocates for his skepticism and hostility toward open access publishing in general (Berger & Cirasella, 2015; Esposito, 2013).

From a methodological standpoint, the major validity problem of using Beall's List to study predatory publishing lies in the possible misjudgment of the publishers. Although the selection criteria were made known to the public, the reasons for Beall to include each individual publisher and standalone journal were not transparent. As Davis (2013) indicated, inclusion relied largely on circumstantial and reported evidence. Therefore, biases could exist in Beall's List. Beall could also have failed to include other real predatory publishers. However, it was the only tool available to researchers who tried to study predatory publishing. All of the existing research on this topic relied on Beall's List as the basis for empirical investigation (Bohannon, 2013; Shen & Björk, 2015; Xia, 2015; Xia et al., 2015). As such, it was a methodological prerequisite to use Beall's List in this study. But the readers should be aware of the potential biases of Beall's List and should interpret the findings as about suspicious, rather than verified, predatory publishers.

3. Predatory Open Access Publishing

Predatory publishing is a recent phenomenon. Prior to 2009, scholarly communities were by and large unaware of predatory publishers until a hoax was revealed to the public. Tired of spam emails from suspicious OA journals, a computer science graduate student at the University of Connecticut produced a grammatically correct but nonsensical paper with a computer program and submitted it to one spamming publisher. The paper was soon accepted with a bill of 800 U.S. dollars as a publication fee (Aldhous, 2009). Following that, news media began to report on this dark side of open access publishing (Beall, 2012a; Bohannon, 2013; Butler, 2013; Gilbert, 2009; Stratford, 2012; Vardi, 2012). According to Beall (2017c), the number of suspicious publishers had grown from eighteen in 2011 to 1,115 in January, 2017. Suspicious standalone journals also increased from 126 in 2013 to 1,294 in 2017.

Very little existing research has studied predatory publishing empirically. Xia (2015) examined 318 standalone journals listed in Beall's List as in November, 2014 and found that 298 journals were alive and had actually published papers. While the focus of the paper was on the article processing fees of the suspicious journals, it also found that, in 2013, each journal on average had published 227 articles. But the differences in paper production were huge. The minimum and maximum numbers of papers were 4 and 2,287. More than half (167/298) of the journal publishers were located in India.

In another paper, Xia et al. (2015) compared the author profiles of three groups of open access journals in biomedical sciences. The first group comprised of seven suspicious journals from Beall's List, and the other two groups contained journals drawn from DOAJ (Directory of Open Access Journals) and PLoS (Public Library of Science) respectively. Both were more reputable sources of open access journals. Statistical analyses based on the authors' publication record, citation count, and geographic location revealed that, each group had a distinct author base. Young and inexperienced scholars from developing countries such as India, Nigeria, and Pakistan constituted the majority of authors who published in predatory journals. In contrast, authors who published in the more reputable open access journals were largely from Western countries and Korea.

Shen and Björk (2015) studied the characteristics of predatory OA publishers. They used Beall's List as the basis to sample publishers and journals. As of September 1, 2014, Beall's List comprised 514 publishers and 416 standalone journals. Excluding those with dead links, there were 11,873 journals published by 996 publishers. They used a rather sophisticated stratified sampling strategy to select a body of 613 journals for their initial analysis. Based on the sample statistics, they drew an estimate on the overall conditions and activities of the entire population. They estimated that around 67% of predatory journals were active, and the journals together had published 420,000 articles in 2014. They also studied the subject distribution of the journals. Most of the journals were in the "general" domain, followed by engineering and biomedicine. Most of the publishers were located in India (27.1%), North America (17.5%), and other Asian regions outside of India (11.6%). A small random sample of 262 corresponding authors suggested that most of the authors were from India (34.7%), other parts of Asia (25.6%), and Africa (16.4%).

No other previous study beyond Shen and Björk (2015) that attempted a quantitative analysis of the overall predatory publishing phenomenon was found. However, Shen and Björk's analysis was based on sampling and estimation. This study, in contrast, adopts the survey approach to comprehensively examine all the publishers and their journals in Beall's List as of January, 2015.

4. Method

This study employed a survey approach to investigate predatory publishing. During September 2014 and January 2015, the researcher and six student assistants checked the websites of all the publishers in the List of Predatory Publisher (LPP) and all the individual journals in the List of Standalone Journals (LSJ) in Beall's List. Each standalone journal was considered as an individual publisher. So the numbers of the publishers and journals were calculated as below:

- Suspicious publishers = LPP publishers + LSJ publishers
- Suspicious journals = all journals published by LPP publishers + LSJ standalone journals

Because new publishers could be added to Beall's List at any time, by the end of the survey the research team compared the completed survey with the current Beall's List to make sure that all publishers listed at that time had been included. By January 15, 2015, Beall's List contained 659 LPP publishers and 458 LSJ publishers. But in data cleaning the researcher found seven LSJ publishers were double listed in LPP, so the actual number of LSJ publishers was 451. That made a total of 1,110 suspicious publishers.

The research team checked each publisher's website and found that 128 LPP publishers and 91 LSJ journals contained dead links or an abnormal status (e.g., linked to irrelevant or empty webpages, containing no journal at all). That made the null publisher rates for Beall's List about 20%–19.42% (128/659) for LPP and 20.18% (91/451) for LSJ.

For the remaining existent 891 (531 LPP + 360 LSJ) publishers, they together claimed to have published 12,557 journals (12,197 journals by 531 LPP publishers plus 360 LSJ standalone journals). The research team checked all of the journals and found that, aside from the journals with dead links, there was a massive amount of "empty journals," i.e., journals with linkable web site/page but without any published papers. By the end of the survey the research team had studied a total of 7,726 journals with published content, 61.53% of the titles claimed to have existed.

For each journal with content ("non-empty journals"), the research team recorded the quantity of its published papers, debut year, and subject topics:

- *Quantity of published papers*. Due to the large number of journals, the research team was not able to count the papers of each journal. The journals were instead categorized into four groups by paper quantity: those having published 10 or less papers, 11-50 papers, 51-100 papers, and more than 100 papers.
- *Journal debut year*. The debut year was used to calculate the journal age. If the journal or its publisher's website did not provide information on its debut year, the publishing year of its first paper was used as its debut year.
- *Subject topics*. The research team used the *Library of Congress Classification* (LCC) to analyse the subject coverage of the non-empty journals. The classification was done by observing the journal title and webpage information. Because of the predatory nature

of the journals, many had unusually wide and diverse subject scopes. Our goal was to observe which subject fields had been more frequently targeted by predatory publishing. Therefore, the classification was done mainly and consistently at the LCC subclass level to allow for systematic and in-depth subject comparisons. The notations of the LCC subclasses were mostly represented by the combination of two letters. The main classes denoted by one letter could also be viewed as parallel to subclasses (The Library of Congress, n.d.). In practice, if a journal's subject coverage is broader than a LCC subclass, it would be denoted by two or three subclasses. In contrast, if a journal's entire subject coverage is narrower than a particular LCC subclass, it would be levelled up to that specific subclass. Due to the large amount of non-empty journals, the researcher decided that each journal could receive up to a maximum of three subclass notations.

Beyond the survey of publishers and journals, the researcher also drew a large sample of papers published in those suspicious journals to observe the geographic distribution of the authors. The sample comprised two subsets, one from journals that had published more than 100 papers (1,631 journals) and the other from those with 10 or less papers (2,316 journals). The reason for the selection of these two contrasting groups was to compare the author bases for the more established journals as opposed to the newer and possibly unstable journals which normally are perceived as risky choices. Originally, the goal was to derive a total of 12,000 papers for author source analysis. But the researcher found that journals with 10 or less papers had published a total of only 5,419 papers. So all were taken for the analysis.

For the "more than 100 papers" group, because predatory journals had predominantly targeted STM (Science, Technology, and Medicine) subjects, the researcher therefore set out to draw 2,000 papers from each domain. Journals with LCC subclass notations that represented Science, Technology, or Medicine were first selected. Then, systematic sampling was used to select 40 journals from each domain. Within each chosen journal, systematic sampling was again used to select 50 papers. The result was 6,000 papers sampled from 120 journals for this group.

Finally, for all 11,419 papers used in the author source analysis, the country of the first author's affiliation was recorded. If the country information was not present in a paper, Internet keyword search or address search was conducted to ascertain the geographic location.

5. Study Findings

5.1 The publisher-level analyses

As mentioned above, by the end of this survey in January 2015, there were 891 existent suspicious publishers (531 LPP + 360 LSJ), and together they published 7,726 non-empty journals. On average, each publisher published 8.67 non-empty journals. But the standard deviation was as high as 23.14. This means that a huge discrepancy existed in publishers' publishing capacity. Table 1 shows the distribution of the publishers by the number of non-empty journals they produced. Those published under the average number of journals (8.67) in fact accounted for 78.8% of the total publishers. And note that half of them (49.0%) had published only one non-empty journal; 95.2% had published less than 37 non-empty journals.

Table 1. The Distribution of Publishers by Number of Non-empty Journals

Number of non-empty journals	Number of publishers	Cum. number of publishers	Percentage	Cumulative percentage
1	437	437	49.0	**49.0**
2	62	499	7.0	56.0
3	41	540	4.6	60.6
4	45	585	5.1	65.7
5	33	618	3.7	69.4
6	39	657	4.4	73.7
7	23	680	2.6	76.3
8	22	702	2.5	**78.8**
9	19	721	2.1	**80.9**
10	16	737	1.8	82.7
11-16	62	799	7.0	89.7
17-36	49	848	5.5	**95.2**
37-89	31	879	3.5	98.7
107-111	3	882	0.3	**99.0**
>111	9	891	1.0	100.0
Total	891		100.0	

Only 12 publishers (1.3%) published more than 100 non-empty journals, hereafter referred to as the "mega publishers." While the number of mega publishers is small, together they published 1,989 non-empty journals, a quarter of the total non-empty journals (25.74%). Further, for the mega publishers alone, their non-empty journals constituted 91.28% of the 2,179 journals they claimed to have published. This percentage was much higher than that (61.53%) of all publishers. Observing the numbers of empty journals of the mega publishers, the empty journal rates were all very low. Most were between zero and 8.76%. Only one outlier had an empty journal rate of 45.10%. This makes mega publishers even more dangerous, if they were indeed predatory, because having fewer or no empty journals makes them look credible. Due to the significance of the mega publishers, the following sections will systematically compare all publishers with the mega publishers.

5.2 The journal-level analyses

5.2.1 Distribution by paper quantity

Table 2 shows that nearly a third (29.98%) of the 7,726 non-empty journals had published only ten or less papers. Meanwhile, those that had published more than 100 papers accounted for only

Table 2. The Distribution of the Journals by Quantity of Papers

Paper quantity	Total journals		Journals by mega publishers	
	N. of journals	Percentage	N. of journals	Percentage
10 or less	2,316	29.98	287	14.43
11-50	2,738	35.44	860	43.24
51-100	1,041	13.47	416	20.92
>100	1,631	21.11	426	21.42
Total	7,726	100.00	1,989	100.00

a fifth (21.11%) of the total journals. It is certainly abnormal to see this rather large proportion of academic journals with such slim content, even taking into account that most of the suspicious journals were relatively new, and, therefore, had fewer papers. When we compare this distribution by paper quantity to the distribution by journal age (to be shown in the next section), it becomes clear that the current distribution is indeed unreasonably disproportionate.

Percentagewise, the mega publishers obviously produced more journals with more content. The group of journals with the thinnest content was the smallest group on the mega publisher side. It makes the mega publishers more appealing than their suspicious peers if the accumulated number of published papers is viewed as evidence of journal stability and credibility. Again, this makes the mega publishers even more dangerous if they are predatory publishers.

5.2.2 Distribution by journal debut year (or journal age)

Table 3 shows that more than 95% of the journals were published in or after 2007 (cumulative percentage: 95.82%). Roughly half (47.07%) of the suspicious journals were published after 2012, and nearly 80% were after 2010. Figure 1 shows that 2011 and 2013 were the two years when the number of suspicious journals dramatically increased.

The chronological distribution of the journals roughly confirms the general impression that predatory publishing mushroomed in the second half of the 2000s. But there were 285 journals (3.69%) that were published before 2007, according to our review of the publishers' activity. Our record showed that 43 journals (0.56%) were published prior to 2000; 25 of them belonged to one particular mega publisher.

Comparatively, the mega publishers had more journals with an older age. As can be seen in Table 3, while 53.04% of their journals were only three years old or newer, nearly half of the journals (46.97%) existed for more than three years. The mega publishers also preceded the mass of suspicious publishers one year ahead in reaching the threshold of 50% and 80%.

A journal's cumulate paper quantity is tightly relative to journal age. While it's not possible to determine what constitutes the smallest reasonable number for a scholarly journal's annual paper production, we expect to see a journal that has

Table 3. The Distribution of Journals by Debut Year/Journal Age

Debut year (journal age)	Total journals				Journals by mega publishers			
	N.	Cum. N.	%	Cum. %	N.	Cum. N.	%	Cum. %
2015 (0 yo)	33	33	0.43	0.43	6	6	0.30	0.30
2014 (1 yo)	1,457	1,490	18.86	19.29	200	206	10.06	10.36
2013 (2 yo)	2,147	3,637	27.79	**47.07**	479	685	24.08	34.44
2012 (3 yo)	1,353	4,990	17.51	64.59	370	1,055	18.60	**53.04**
2011 (4 yo)	1,086	6,076	14.06	**78.64**	375	1,430	18.85	71.90
2010 (5 yo)	532	6,608	6.89	85.53	178	1,608	8.95	**80.84**
2009 (6 yo)	342	6,950	4.43	89.96	120	1,728	6.03	86.88
2008 (7 yo)	223	7,173	2.89	92.84	126	1,854	6.33	93.21
2007 (8 yo)	230	7,403	2.98	**95.82**	100	1,954	5.03	98.24
Before 2007	285	7,688	3.69	99.51	28	1,982	1.41	99.65
Uncertain	38	7,726	0.49	100.00	7	1,989	0.35	100.00
Total	7,726		100.00		1,989		100.00	

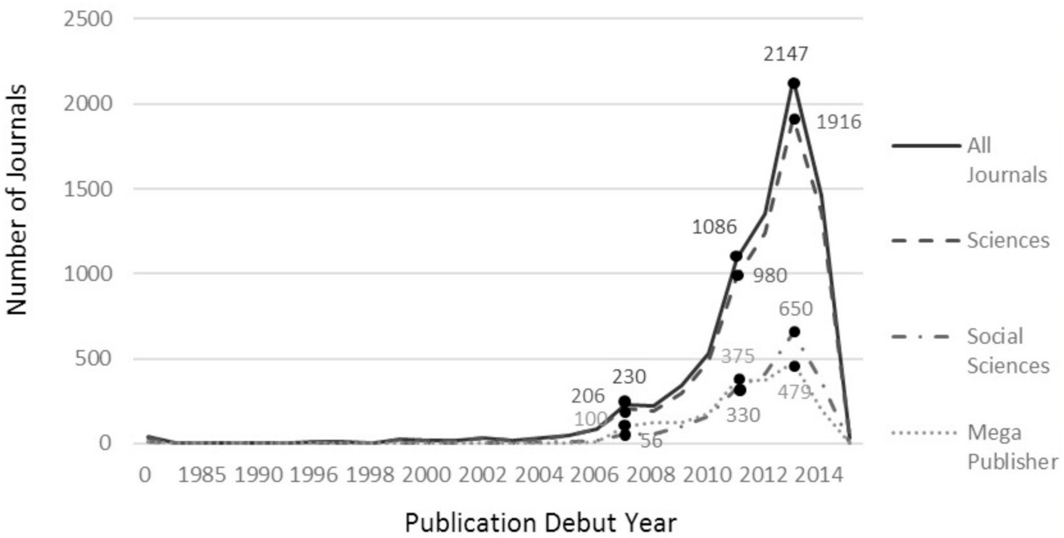

Figure 1. The Distributions of Journals by Debut Year

published for one year to have published more than 10 papers, if it was in a good and sound standing. Table 2 shows that journals with 10 or less papers accounted for 29.98% of the journals studied. However, Table 3 shows that the one-year old and younger journals accounted for only 19.72%. A 10% difference means at least 826 journals failed to publish a reasonable amount of papers, using at least 10 papers a year as reasonable for a journal's annual production. The researcher further examined the 2,316 journals with 10 or less papers and found that 1,231 (53.15%) of them were older than one year (i.e., published before 2014). Again, if we take 10 papers a year as a reasonable threshold for a healthy journal, half failed to maintain reasonable paper production.

Looking at mega publishers, the number gap between Table 2 and Table 3 seems to be smaller at the first glance. Mega publishers' journals with 10 or less papers accounted for 14.43%, while the one-year old or younger journals accounted for 10.36%. The 4.07% difference between them is much smaller than the difference observed in all journals. However, the researcher examined the 287 journals with 10 or less papers and found that 143 (49.83%) debuted prior to 2014. Still, half of the mega publishers' newer journals did not achieve a reasonable annual production.

5.2.3 Distribution by subject area

As explained earlier, the research team classified the journals with the *Library of Congress Classification* at the subclass level. Each journal could receive up to three subclass notations, so the total numbers in the following tables may exceed the total number of journals. The LCC main classes and subclasses can be aggregated to represent the larger subject division of sciences, social sciences, and humanities. In this analysis, sciences comprised the LCC main classes of Q (Science), R (Medicine), S (Agriculture), T (Technology), U (Military Science), and V (Naval Science). Social sciences included the main classes of G (Geography, Anthropology, Recreation), H (Social Sciences), J (Political Science), K (Law), L (Education), and Z (Bibliography, Library Science, Information Resources) and the subclass BF (Psychology). Humanities were represented by all other LCC main classes except A (General Works).

As Table 4 shows, the suspicious journals mostly targeted the sciences (90.73%). The number of science journals was 3.18 times the number of social science journals. In contrast, the humanities were pretty much ignored by the possible predatory publishers. The mega publishers targeted sciences even more (93.01%). The number of science journals produced by mega publishers was 5.30 times greater than the number of social science journals.

The chronological distributions of the science and social science journals were illustrated in Figure 1. The chronological distribution of the science journals highly resembles the distribution of total journals. The distribution of social science journals, although less elevated than the others, showed similar chronological surges. This means that although the sciences had been the foremost target of possibly predatory publishers, social sciences were also becoming prey.

In further examination Table 5 shows that the three STM classes, LCC main classes Q, T, and R, had even shares within the science journals; each claimed approximately 30% of the journals.

Table 4. The Distribution of Journals by Broad Subject Division

Broad subject	Total journals		Journals by mega publishers	
	N. of journals	Percentage (N = 7,726)	N. of journals	Percentage (N = 1,989)
General	185	2.39	15	0.75
Humanities	292	3.78	50	2.51
Social Sciences	2,202	28.50	349	17.55
Sciences	7,010	90.73	1,850	93.01
Total[a]	9,689	125.41	2,264	113.83

[a] The total number exceeded the actual journal numbers because a journal may receive up to three subclass notations.

Table 5. The Distribution of the STM Journals

STM subjects	Total journals		Journals by mega publishers	
	N. of journals	Percentage (N = 7,010)	N. of journals	Percentage (N = 1,850)
Science (Class Q)	2,390	34.09	617	33.35
Technology (Class T)	1,896	27.05	390	21.08
Medicines (Class R)	2,208	31.50	709	38.32
STM Subtotal	6,494	92.64	1,716	92.76
Sciences Total[a]	7,010	100.00	1,850	100.00

[a] Other LCC classes of sciences not included in STM are Class S (Agriculture), U (Military Science), and V (Naval Science).

The mega publishers in particular had a very high interest in medical sciences. In fact, not only the mega publishers, but all of the possibly predatory publishers had a strong intention to profit on biomedical sciences. As the following subclass analyses shows, many highly targeted Science and Technology areas are closely linked to biomedical research.

Tables 6-8 show the results of subclass-level analyses of the STM journals. Together they show that all predatory publishers found the same subjects attractive and focused mainly on a limited number of subjects. In all three STM domains, both the journals of all publishers and those of the mega publishers concentrated on the same top subclasses. The top seven subclasses of Class Q (Science) and Class T (Technology) as well as the top six subclasses of Class R (Medicine) were exactly the same for the two groups, although the ranking orders were different. The cumulative percentages of the journals show that, in each of

Table 6. The Distribution of Journals by Subclass in Class Q (Science)

Rank	Subclass	Total journals				Subclass	Journals by mega publishers			
		N.	Cum. N.	%	Cum. %		N.	Cum. N.	%	Cum. %
1	QH–Natural History-Biology	516	516	21.59	21.59	QH	170	170	27.55	27.55
2	QA–Mathematics (Including Computer Science)	515	1,031	21.55	43.14	QD	100	270	16.21	43.76
3	Q–Science (General)	324	1,355	13.56	56.69	QA	86	356	13.94	57.70
4	QD–Chemistry	315	1,670	13.18	69.87	QC	72	428	11.67	69.37
5	QC–Physics	212	1,882	8.87	78.74	QR	44	472	7.13	76.50
6	QR–Microbiology	158	2,040	6.61	85.36	QP	38	510	6.16	82.66
7	QP–Physiology	84	2,124	3.51	88.87	Q	26	536	4.21	86.87
8	QK–Botany	76	2,200	3.18	92.05	QL	24	560	3.89	90.76
9	QL–Zoology	71	2,271	2.97	95.02	QB	16	576	2.59	93.35
10	QE–Geology	68	2,339	2.85	97.87	QE	16	592	2.59	95.95
11	QB–Astronomy	30	2,369	1.26	99.12	QK	16	608	2.59	98.54
12	QM–Human Anatomy	21	2,390	0.88	100.00	QM	9	617	1.46	100.00
	Total	2,390		100.00		Total	617		100.00	

Table 7. The Distribution of Journals by Subclass in Class T (Technology)

Rank	Subclass	Total journals				Subclass	Journals by mega publishers			
		N.	Cum. N.	%	Cum. %		N.	Cum. N.	%	Cum. %
1	TA–Engineering (General). Civil Engineering	433	433	22.84	22.84	TP	79	79	20.26	20.26
2	T–Technology (General)	328	761	17.30	40.14	TA	70	149	17.95	38.21
3	TK–Electrical Engineering. Electronics. Nuclear Engineering	323	1,084	17.04	57.17	TK	58	207	14.87	53.08
4	TP–Chemical Technology	312	1,396	16.46	73.63	TJ	51	258	13.08	66.15
5	TJ–Mechanical Engineering and Machinery	177	1,573	9.34	82.96	T	35	293	8.97	75.13
6	TD–Environmental Technology. Sanitary Engineering	105	1,678	5.54	88.50	TD	34	327	8.72	83.85
7	TX–Home Economics	92	1,770	4.85	93.35	TX	24	351	6.15	90.00
8	TS–Manufactures	48	1,818	2.53	95.89	TN	11	362	2.82	92.82
9	TN–Mining Engineering. Metallurgy	25	1,843	1.32	97.20	TL	10	372	2.56	95.38
10	TL–Motor Vehicles. Aeronautics. Astronautics	23	1,866	1.21	98.42	TS	9	381	2.31	97.69
11	TC–Hydraulic Engineering. Ocean Engineering	17	1,883	0.90	99.31	TC	6	387	1.54	99.23
12	TH–Building Construction	6	1,889	0.32	99.63	TH	2	389	0.51	99.74
13	TE–Highway Engineering. Roads and Pavements	2	1,891	0.11	99.74	TR	1	390	0.26	100.00
14	TR–Photography	2	1,893	0.11	99.84	-	-	-	-	-
15	TT–Handicrafts. Arts and Crafts	2	1,895	0.11	99.95	-	-	-	-	-
16	TF–Railroad Engineering and Operation	1	1,896	0.05	100.00	-	-	-	-	-
	Total	1,896		100.00		Total	390		100.00	

Table 8. The Distribution of Journals by Subclass in Class R (Medicine)

Rank	Subclass	Total journals				Subclass	Journals by mega publishers			
		N.	Cum. N.	%	Cum. %		N.	Cum. N.	%	Cum. %
1	RC–Internal Medicine	661	661	29.94	29.94	RC	281	281	39.63	39.63
2	R–Medicine (General)	376	1,037	17.03	46.97	R	94	375	13.26	52.89
3	RA–Public Aspects of Medicine	271	1,308	12.27	59.24	RA	82	457	11.57	64.46
4	RS–Pharmacy and Materia Medica	242	1,550	10.96	70.20	RM	71	528	10.01	74.47
5	RM–Therapeutics. Pharmacology	208	1,758	9.42	79.62	RD	52	580	7.33	81.81
6	RD–Surgery	136	1,894	6.16	85.78	RS	38	618	5.36	87.17
7	RB–Pathology	59	1,953	2.67	88.45	RG	15	633	2.12	89.28
8	RK–Dentistry	56	2,009	2.54	90.99	RB	14	647	1.97	91.26
9	RT–Nursing	54	2,063	2.45	93.43	RK	14	661	1.97	93.23
10	RG–Gynecology and Obstetrics	48	2,111	2.17	95.61	RJ	11	672	1.55	94.78
11	RJ–Pediatrics	30	2,141	1.36	96.97	RT	11	683	1.55	96.33
12	RE–Ophthalmology	22	2,163	1.00	97.96	RF	9	692	1.27	97.60
13	RL–Dermatology	20	2,183	0.91	98.87	RE	8	700	1.13	98.73
14	RF–Otorhinolaryngology	16	2,199	0.72	99.59	RL	8	708	1.13	99.86
15	RX–Homeopathy	4	2,203	0.18	99.77	RX	1	709	0.14	100.00
16	RZ–Other Systems of Medicine	3	2,206	0.14	99.91	-	-	-	-	-
17	RV–Botanic, Thomsonian, and Eclectic Medicine	2	2,208	0.09	100.00	-	-	-	-	-
	Total	2,208		100.00		Total	709		100.00	

the STM domains, roughly 80% of journals were concentrated in only five subclasses.

Another noteworthy observation was that biomedical research as a whole was the largest target of publishers. Looking at the top subclasses of Class Q (Science), there were QH (Natural History-Biology), QD (Chemistry), QR (Microbiology), and QP (Physiology) — all are closely related to biomedical research (see Table 6). In Class T (Technology), TP (Chemical Technology) was also among the top subclasses.

The mega publishers targeted biomedical research even more. Not only did Class R (Medicines) have the largest share of the mega publisher journals, it was also higher than that of the total journals (see Table 5). Subclass analyses of the mega publisher journals further showed that, in Class Q (Science), QH (Biology) and QD (Chemistry) occupied the top places (see Table 6); in Class T (Technology), TP (Chemical Technology) was in the top place. These results show that mega publishers attempted to profit off biomedical researchers.

Table 9 shows the subject distribution of the social science journals. All of the social science subclasses were ranked together due to the much smaller amount of journals in the subject areas. The social sciences domain was represented by LCC main classes of G, H, J, K, L, Z, and the subclass BF. The analysis showed that the social science journals distributed across 39 subclasses, and it took 13 subclasses for the cumulative percentages to reach 80%. However, observing the top subclasses, one may still find that business and management related fields had been the major target in this group. Three business and management related subject areas together accounted for approximately 1/3 (34.52%) of the total journals, including HF (Commerce, 14.90%), HD (Industries/Land Use/Labor, 14.49%), and HG (Finance, 5.13%).

Comparing the subject distributions of the total journals and journals by the mega publishers, the ranking orders also varied greatly. In the top five subclasses, only four were the same for both groups, i.e., HF (Commerce), HD (Industries. Land Use. Labor), HB (Economic Theories. Demography), and GE (Environmental Sciences). Beyond that, the distributions were dissimilar. This means that the mega publishers' behaviour in social sciences was rather different from the other publishers.

5.2.4 Findability in DOAJ

This researcher used the ISSN or E-ISSN collected from the non-empty journals to search the *Directory of Open Access Journals* (DOAJ) to understand how many of the suspicious journals could be found in the reputable portal for open access content. At the end of the review, 6,098 of the 7,726 non-empty journals had an ISSN or E-ISSN number, but the researcher made no attempt to verify the accuracy of those numbers. In October 2015, 790 (10.23%) journals were found in DOAJ, using a self-developed automatic search program. Among them, 182 journals were from eight mega publishers.

5.3 The author-level analyses

Using a sample of 11,419 papers (5,419 from journals with 10 or less papers and 6,000 from journals with more than 100 papers), the researcher investigated the geographic distribution of first authors. Some papers in the sample lacked identifiable author affiliation information, and in

Table 9. The Distribution of Journals by Subclass in Social Sciences

Rank	Subclass	Total journals				Subclass	Journals by mega publishers			
		N.	Cum. N.	%	Cum. %		N.	Cum. N.	%	Cum. %
1	HF–Commerce	328	328	14.90	14.90	HD	39	39	11.17	11.17
2	HD–Industries. Land use. Labor	319	647	14.49	29.38	HF	27	66	7.74	18.91
3	H–Social Sciences (General)	182	829	8.27	37.65	HB	24	90	6.88	25.79
4	HB–Economic Theory. Demography	180	1,009	8.17	45.82	BF	24	114	6.88	32.66
5	GE–Environmental Sciences	142	1,151	6.45	52.27	GE	21	135	6.02	38.68
6	L–Education (General)	124	1,275	5.63	57.90	HG	20	155	5.73	44.41
7	HG–Finance	113	1,388	5.13	63.03	G	18	173	5.16	49.57
8	LB–Theory and Practice of Education	89	1,477	4.04	67.08	HM	16	189	4.58	54.15
9	BF–Psychology	79	1,556	3.59	70.66	GB	15	204	4.30	58.45
10	G–Geography (General). Atlases. Maps	66	1,622	3.00	73.66	GN	12	216	3.44	61.89
11	HM–Sociology (General)	55	1,677	2.50	76.16	LC	12	228	3.44	65.33
12	Z–Books (General). Writing. Paleography. Book Industries and Trade. Libraries. Bibliography	54	1,731	2.45	78.61	K	11	239	3.15	68.48
13	HA–Statistics	43	1,774	1.95	80.56	GC	10	249	2.87	71.35
14	K–Law in General. Comparative and Uniform Law. Jurisprudence	43	1,817	1.95	82.52	HA	10	259	2.87	74.21
15	GN–Anthropology	42	1,859	1.91	84.42	HC	10	269	2.87	77.08
16	LC–Special Aspects of Education	42	1,901	1.91	86.33	HV	9	278	2.58	79.66
17	HC–Economic History and Conditions	32	1,933	1.45	87.78	L	9	287	2.58	82.23
18	GB–Physical Geography	29	1,962	1.32	89.10	Z	9	296	2.58	84.81
19	GV–Recreation. Leisure	29	1,991	1.32	90.42	GV	8	304	2.29	87.11
20	HE–Transportation and Communications	28	2,019	1.27	91.69	H	8	312	2.29	89.40
21	HV–Social Pathology. Social and Public Welfare. Criminology	27	2,046	1.23	92.92	LB	8	320	2.29	91.69

Table 9. The Distribution of Journals by Subclass in Social Sciences (continued)

Rank	Subclass	Total journals				Subclass	Journals by mega publishers			
		N.	Cum. N.	%	Cum. %		N.	Cum. N.	%	Cum. %
22	JA–Political Science (General)	23	2,069	1.04	93.96	HQ	6	326	1.72	93.41
23	GC–Oceanography	21	2,090	0.95	94.91	GF	5	331	1.43	94.84
24	GF–Human Ecology. Anthropogeography	18	2,108	0.82	95.73	HE	4	335	1.15	95.99
25	HQ–The Family. Marriage. Women	18	2,126	0.82	96.55	JA	4	339	1.15	97.13
26	JZ–International Relations	18	2,144	0.82	97.37	HT	3	342	0.86	97.99
27	JF–Political Institutions and Public Administration	14	2,158	0.64	98.00	HN	2	344	0.57	98.57
28	HT–Communities. Classes. Races	9	2,167	0.41	98.41	JF	2	346	0.57	99.14
29	HJ–Public Finance	7	2,174	0.32	98.73	JZ	2	348	0.57	99.71
30	HN–Social History and Conditions. Social Problems. Social Reform	7	2,181	0.32	99.05	HS	1	349	0.29	100.00
31	GR–Folklore	4	2,185	0.18	99.23	-	-	-	-	-
32	JC–Political Theory	4	2,189	0.18	99.41	-	-	-	-	-
33	LA–History of Education	4	2,193	0.18	99.59	-	-	-	-	-
34	GA–Mathematical Geography. Cartography	2	2,195	0.09	99.68	-	-	-	-	-
35	JQ–Political Institutions and Public Administration (Asia)	2	2,197	0.09	99.77	-	-	-	-	-
36	JS–Local Government. Municipal Government	2	2,199	0.09	99.86	-	-	-	-	-
37	HS–Societies: Secret, Benevolent, etc.	1	2,200	0.05	99.91	-	-	-	-	-
38	JN–Political Institutions and Public Administration (Europe)	1	2,201	0.05	99.95	-	-	-	-	-
39	ZA–Information Resources	1	2,202	0.05	100.00	-	-	-	-	-
	Total	2,202		100.00		Total	349		100.00	

some rare cases there were multiple first authors (i.e., co-first authors). As such, the research team recorded 11,343 analysable instances for the analysis of first author locations.

Table 10 shows that the geographic distribution of author sources was highly similar between the entire sample and the sub-samples. The top seven countries were exactly the same, as was the order of countries. Overall, India, United States, and Nigeria together contributed about half (49.1%) of the sample. In particular, India alone contributed near half (41.5%) to the sub-sample of journals with more than 100 papers. Inferring from this distribution, one may safely conclude that India was the largest author source for the suspicious journals. But the United States, Nigeria, and China also had a rather large number of authors submit their works to journals with very few published papers. Theoretically, an author might have a better assessment of the quality and credibility of a journal if there is sufficient published content for him or her to review. Why these countries had groups of authors willing to risk submitting their works to rather unestablished journals becomes a serious question to ponder. Future investigations are required to understand the authors' motivations, factors influencing their paper submission decisions, and possible policy solutions to prevent scholars from becoming victims of predatory publishers.

6. Discussion and Conclusion

The emergence of predatory OA publishing has influenced scholarly communication profoundly and negatively. First, the content produced by predatory publishers hinders the advance of scientific knowledge and may negatively affect public policies and citizen lives when decision making is influenced by poorly executed research (Millard, 2013). Second, the unethical behaviors of predatory publishers erodes the long built trust and confidence in the scholarly communication system. It has detrimental effects on various aspects of research and learning. For example, an academic may have to submit more than his/her research works for promotion or tenure reviews. He or she will possibly have to provide further documentation and proof to indicate that their research has gone through sound peer review (Ray, 2016). This can occur when scholarly publishers are no longer trusted. Predatory OA publishing also constitutes a threat to student learning. As younger generations rely more and more on the Internet for learning and research, how freely accessible scholarly content of varying levels of quality will affect student learning is another serious question for all educators and librarians. This threat is particularly alarming for biomedicines as a large proportion of the suspicious journals are targeting the related subject areas. Papers of questionable quality may seriously affect the education of the future biomedical researchers and professionals.

The results of this study show that many of the suspicious journals were recently-launched publications. Many of them had a less-than-normal quantity of published content. The possible predatory publications predominantly targeted natural and applied sciences, particularly biomedical research. Other STM areas that are more grant-rich, such as computer sciences, physics, civil engineering, and electronic engineering, were also their major targets.

Table 10. Country Distribution of First Authors

Rank	The entire sample					Sub-sample: Journals w. 10 or less papers					Sub-sample: Journals w. more than 100 papers				
	Country	N.	Cum. N.	%	Cum. %	Country	N.	Cum. N.	%	Cum. %	Country	N.	Cum. N.	%	Cum. %
1	India	3,635	3,635	32.0	32.0	India	1,027	1,027	20.3	20.3	India	2,608	2,608	41.5	41.5
2	United States	1,208	4,843	10.6	42.7	United States	735	1,762	14.5	34.8	United States	473	3,081	7.5	49.0
3	Nigeria	730	5,573	6.4	49.1	Nigeria	424	2,186	8.4	43.2	Nigeria	306	3,387	4.9	53.9
4	China	614	6,187	5.4	54.5	China	312	2,498	6.2	49.4	China	302	3,689	4.8	58.7
5	Iran	434	6,621	3.8	58.4	Iran	168	2,666	3.3	52.7	Iran	266	3,955	4.2	62.9
6	Egypt	302	6,923	2.7	61.0	Egypt	163	2,829	3.2	56.0	Egypt	140	4,095	2.2	65.1
7	Japan	276	7,199	2.4	63.5	Japan	136	2,965	2.7	58.6	Japan	139	4,234	2.2	67.3
8	Italy	230	7,429	2.0	65.5	Italy	129	3,094	2.6	61.2	Malaysia	138	4,372	2.2	69.5
9	Malaysia	203	7,632	1.8	67.3	Turkey	91	3,185	1.8	63.0	Italy	101	4,473	1.6	71.1
10	United Kingdom	159	7,791	1.4	68.7	Greece	88	3,273	1.7	64.7	Brazil	92	4,565	1.5	72.6
	[Others]					[Others]					[Others]				
	Total	11,343				Subtotal	5,056				Subtotal	6,287			

Currently, contributors to potential predatory journals were largely from a few particular countries. Whether such geographical distribution is related to publisher location is of interest to the stakeholders of scholarly communication, but is unable to verify with our study data as previous reported cases have shown that some publishers did fake their identities and locations (Bohannon, 2013).

Anyhow, the author source analysis should be taken as an alert for research communities and policy makers in those countries. They may need to further understand why so many of their academic researchers submit their works to rather unestablished and sometimes highly dubious journals. Is it because the authors in those countries are under greater pressures to publish regardless of journal quality? Do they need more scholarly publishing literacy education to help them verify the quality and credibility of a publisher? What interventions can be provided to mitigate the damages caused by predatory publishing? These issues all await future research.

A significant limitation of this study is that it employed a controversial source for the investigation. Given the fact that no other tool existed to fathom the problem, the journal survey based on the Beall's List still may have offered a distorted picture of predatory publishing. Many have accused Beall of being over-zealous in blacklisting journals so that the Beall's List may have possibly exaggerated the threat. On the other hand, as suspicious journals began to populate the scholarly world in 2009, Beall gradually relied on notifications from voluntary informants to identify and include predators. The List may have failed to include publishers and journals that are predatory in nature. That is, whether the findings of this study have over exaggerated or underestimated the phenomenon of predatory publishing becomes a question of no answer.

The open access community is now fully aware of the threat and has begun to tackle the challenges. For example, DOAJ announced a new journal inclusion policy at the end of 2015 that required all previously listed journals to resubmit their applications for review. The new application rules now require transparency in the composition of editorial board, review process, and article processing charges (author-fees) (Directory of Open Access Journals [DOAJ], n.d.). In May, 2016, DOAJ removed approximately 3,300 journals that failed to resubmit a valid application (DOAJ, 2016). It was the first step of the trusted open access portal to combat questionable publishers.

The recent removal of the Beall's List and Jeffrey Beall's sudden decision to shut down his SOA blog constitutes a new challenge for those concerned with predatory publishing. For the past few years, scholarly communities have relied on this single source to stay alert of emergent potential predatory publishers. Due to the one-person operation nature of Beall's work, as well as the aforementioned problems in Beall's identification and evaluation of the publishers, Beall's List had been subject to serious criticism and attacks. Following the cessation of Beall's List, scholarly communities will have to work with other stakeholders including publishers, libraries, and government agencies to develop new ways for differentiating credible and dubious publishers. Berger and Cirasella (2015) suggested a "whitelisting approach" to replace Beall's blacklisting approach, as there is a "fuzziness between low-quality and predatory publishers." Either way, a growing demand for federated efforts from scholarly communities exists.

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References

Aldhous, P. (2009). CRAP paper accepted by journal. *New Scientist*. Retrieved from http://www.newscientist.com/article/dn17288-crap-paper-accepted-by-journal.html#.UsIwj_QW3FA.

Beall, J. (2012a). Predatory publishers are corrupting open access. *Nature, 489*(7415), 179. doi: 10.1038/489179a

Beall, J. (2012b). Predatory publishing. *The Scientist*. Retrieved from http://www.the-scientist.com/?articles.view/articleNo/32426/title/Predatory-Publishing/

Beall, J. (2013). Appeals. *Scholarly Open Access* [last captured by Internet Archive on November 22, 2016]. Retrieved from https://web.archive.org/web/20161122203003/https://scholarlyoa.com/other-pages/appeals/

Beall, J. (2015). *Criteria for determining predatory open-access publishers* [last captured by Internet Archive on January 12, 2017]. Retrieved from https://web.archive.org/web/20170105195017/https://scholarlyoa.files.wordpress.com/2015/01/criteria-2015.pdf

Beall, J. (2017a). List of publisher. *Scholarly Open Access* [last captured by Internet Archive on January 12, 2017]. Retrieved from https://web.archive.org/web/20170112125427/https://scholarlyoa.com/publishers/

Beall, J. (2017b). List of standalone journal. *Scholarly Open Access* [last captured by Internet Archive on January 12, 2017]. Retrieved from https://web.archive.org/web/20170111172309/https://scholarlyoa.com/individual-journals/

Beall, J. (2017c). *Scholarly Open Access* [last captured by Internet Archive on January 3, 2017]. Retrieved from https://web.archive.org/web/20170103170903/https://scholarlyoa.com/

Beall, J. (2017d). Misleading metrics. *Scholarly Open Access* [last captured by Internet Archive on January 11, 2017]. Retrieved from https://web.archive.org/web/20170111172311/https://scholarlyoa.com/other-pages/misleading-metrics/

Beall, J. (2017e). List of hijacked journals. *Scholarly Open Access* [last captured by Internet Archive on January 11, 2017]. Retrieved from https://web.archive.org/web/20170111172313/https://scholarlyoa.com/other-pages/hijacked-journals/

Berger, M., & Cirasella, J. (2015). Beyond Beall's List: Better understanding predatory publishers. *College & Research Libraries News, 76*(3), 132-135. doi: 10.5860/crln.76.3.9277

Bohannon, J. (2013). Who's afraid of peer review? *Science, 342*(6154), 60-65. doi: 10.1126/science.342.6154.60

Budapest Open Access Initiative. (2002). *Read the Budapest Open Access Initiative*. Retrieved from http://www.budapestopenaccessinitiative.org/read

Butler, D. (2013). Investigating journals: The dark side of publishing. *Nature, 495*(7422), 433-435. doi: 10.1038/495433a

Davis, P. (2013). Open Access "sting" reveals deception, missed opportunities. *The Scholarly Kitchen*. Retrieved from https://scholarlykitchen.sspnet.org/2013/10/04/open-access-sting-reveals-deception-missed-opportunities/

Directory of Open Access Journals. (2016). *DOAJ to remove approximately 3300 journals*. Retrieved from https://doajournals.wordpress.com/2016/05/09/doaj-to-remove-approximately-3300-journals/

Directory of Open Access Journals. (n.d.). *Information for publishers*. Retrieved from https://doaj.org/publishers#advice

Esposito, J. (2013). Parting company with Jeffrey Beall. *The Scholarly Kitchen*. Retrieved from https://scholarlykitchen.sspnet.org/2013/12/16/parting-company-with-jeffrey-beall/

Fabre, R. (2016). *New challenges for knowledge: Digital dynamics to access and sharing*. London, England: John Wiley & Sons.

Flaherty, C. (2013, February 15). Librarians and lawyers. *Inside Higher ED*. Retrieved from https://www.insidehighered.com/news/2013/02/15/another-publisher-accuses-librarian-libel

Gilbert, N. (2009). Editor will quit over hoax paper. *Nature*. doi: 10.1038/news.2009.571

Jack. (2012). *One response to I always thought you looked dodgy*. Retrieved from http://openise.wordpress.com/2012/10/02/i-always-thought-you-looked-dodgy/#comments

Millard, W. B. (2013). Some research wants to be free, some follows the bogus journals complicate the open access movement. *Annals of Emergency Medicine, 62*(2), 14A-20A. doi: 10.1016/j.annemergmed.2013.06.009

New, J. (2013, May 15). Publisher threatens to sue blogger for $1-billion. *The Chronicle of Higher Education*. Retrieved from http://chronicle.com/article/Publisher-Threatens-to-Sue/139243/?cid=at&utm_source=at&utm_medium=en

Poynder, R. (2004). Ten years after. *Information Today, 21*(9), 1, 23-24, 44, 46.

Ray, M. (2016). An expanded approach to evaluating open access journals. *Journal of Scholarly Publishing, 47*(4), 307-327. doi: 10.3138/jsp.47.4.307

Retraction Watch. (2017). *Why did Beall's List of potential predatory publishers go dark?* Retrieved from http://retractionwatch.com/2017/01/17/bealls-list-potential-predatory-publishers-go-dark/

Shen, C., & Björk, B. (2015). 'Predatory' open access: A longitudinal study of article volumes and market characteristics. *BMC Medicine, 13*(230). doi: 10.1186/s12916-015-0469-2

Stratford, M. (2012). 'Predatory' online journals lure scholars who are eager to publish. *Chronicle of Higher Education, 27*, A1-A8.

The Library of Congress. (n.d.). *Library of Congress classification outline*. Retrieved from https://www.loc.gov/catdir/cpso/lcco/

Vardi, M. Y. (2012). Predatory scholarly publishing. *Communications of the ACM, 55*(7), 5. doi: 10.1145/2209249.2209250

Xia, J. (2015). Predatory journals and their article publishing charges. *Learned Publishing, 28*(1), 69-74. doi: 10.1087/20150111

Xia, J., Harmon, J., Connolly, K., Donnelly, R., Anderson, M., & Howard, H. (2015). Who publishes in predatory journals. *Journal of the Association for Information Science and Technology, 66*(7), 1406-1417. doi: 10.1002/asi.23265

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掠奪型開放近用期刊之調查研究

An Exploratory Survey of the Suspicious Open Access Journals

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摘　要

本文調查具有掠奪嫌疑的開放近用期刊，以Jeffrey Beall's所編的Beall's List為基礎，其中包含出版商及獨立期刊（standalone journals）兩份清單。至2015年1月底，扣除無效連結與空刊，本文發現891個尚有活動的出版商及7,726份有內容的期刊；其中，1,989份期刊是由12個鉅型出版商所出版（旗下均擁有100份以上非空刊）。在調查當時，將近一半的出版商僅出版一份有內容的期刊；將近2/3的期刊，其論文數低於50篇；且將近一半的期刊是兩年內創刊的。高達90%的期刊屬科學、科技或醫學領域，且在數量上幾乎鼎足而三，不分軒輊。本研究並分析11,419篇論文的第一作者來源國，文章樣本取自擁有百篇以上論文的期刊及總數少於10篇論文的期刊；結果顯示印度、美國、奈及利亞為作者來源前三大，共佔樣本50%。

關鍵字：開放近用期刊、掠奪型出版、學術傳播

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