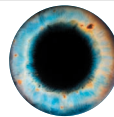


COMMENT

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OBITUARY Eugene Garfield, father of bibliometrics, remembered **p.492**

ILLUSTRATION BY RICHARD WILKINSON



Predatory journals recruit fake editor

An investigation finds that dozens of academic titles offered 'Dr Fraud' — a sham, unqualified scientist — a place on their editorial board.

Katarzyna Pisanski and colleagues report.

Thousands of academic journals do not aspire to quality. They exist primarily to extract fees from authors. These 'predatory' journals exhibit questionable marketing schemes, follow lax or non-existent peer-review procedures and fail to provide scientific rigour or transparency¹⁻³.

The open-access movement, although noble in its intent, has been an unwitting host to these parasitic publishers. Bogus

journals can imitate legitimate ones that also collect fees from authors. Researchers, eager to publish (lest they perish), may submit their papers with or without verifying a journal's reputability.

Crucial to a journal's quality is its editors. Editors decide whether a paper is reviewed and by whom, and whether a submission should be rejected, revised or accepted. Such roles have usually been assigned to

established experts in the journal's field, and are considered prestigious positions.

Many predatory journals hoping to cash in seem to aggressively and indiscriminately recruit academics to build legitimate-looking editorial boards. Although academic pranksters have successfully placed fictional characters on editorial boards (see go.nature.com/2nbikpp), no one has examined the issue systematically. We did. ▶

► We conceived a sting operation and submitted a fake application for an editor position to 360 journals, a mix of legitimate titles and suspected predators. Forty-eight titles and suspected predators. Forty-eight titles accepted. Many revealed themselves to be even more mercenary than we had expected.

THE STING

We study human behaviour, and conceived of this sting when working together at the University of Wrocław in Poland. Although our research rarely focuses on scholarly publishing, we became increasingly disturbed at the number of invitations we received to become editors or to review for journals completely outside our field. We learnt that some of our colleagues, mainly early-career researchers, were unaware of predatory practices and had fallen for these traps. It became clear that the problem was huge, yet had not been empirically examined.

So, in 2015, we created a profile of a fictitious scientist named Anna O. Szust and applied on her behalf to the editorial boards of 360 journals. *Oszust* is the Polish word for 'a fraud'. We gave her fake scientific degrees and credited her with spoof book chapters. Her academic interests included, among others, the theory of science and sport, cognitive sciences and methodological bases of social sciences. We also created accounts for Szust on Academia.edu, Google+ and Twitter, and made a faculty webpage at the Institute of Philosophy at the Adam Mickiewicz University in Poznań. The page could be accessed only through a link we provided on her CV.

The profile was dismally inadequate for a role as editor. Szust's 'work' had never been indexed in the Web of Science or Scopus databases, nor did she have a single citation in any literature database. Her CV listed no articles in academic journals or any experience as a reviewer, much less an editor. The books and chapters on her CV did not exist and could not be found through any search engine. Even the publishing houses were fake.

We sent Szust's application to 360 journals, 120 from each of three well-known directories: the JCR (journals with an official impact factor as indexed on Journal Citation Reports), the DOAJ (journals included on the Directory of Open Access Journals) and 'Beall's list' (potential, possible or probable predatory open-access publishers and journals, compiled by University of Colorado librarian Jeffrey Beall; Beall took down his list in January this year for unknown reasons, after we had completed our study).

To be indexed by either the JCR or the DOAJ, journals must meet certain standards of quality, including ethical publishing practices. Journals listed on the DOAJ must also be fully open access. By contrast, Beall's controversial yet widely used blacklist identified potential predatory journals.

It consisted of journals that, in his opinion, exploited researchers and failed to meet basic standards of scholarly publishing.

We asked two postgraduate researchers, unaware of our study's purpose, to pseudo-randomly select 120 English-language journals that matched Szust's expertise from each list. We then e-mailed Szust's application for editor — a CV and cover letter — to these 360 journals and tracked responses for six months. Applications were identical, except that some contained an extra paragraph expressing Szust's enthusiasm for new open-access journals.

The aim of our study was to help academics to understand how bogus versus legitimate journals operate, not to trick journals into accepting our editor. For this reason, Szust was not a persistent applicant. If journals did not respond to her application, we did not e-mail them again, but coded them as 'No response'. Journals that responded initially but failed to follow up were coded as 'Rejected'. Any attempt by a journal to verify Szust's qualifications (for example, through a trial review of a manuscript or through an interview) was also considered a rejection, as were explicit rejections. We coded journals as 'Accepted' only if a reply to our e-mail explicitly accepted Szust as editor (in some cases contingent on financial contribution) or if Szust's name appeared as an editorial board member on the journal's website.

ALL TOO EASY

In many cases, we received a positive response within days of application, and often within hours. Four titles immediately appointed Szust editor-in-chief. No JCR journal accepted Szust. By comparison, 40 predatory and 8 DOAJ journals appointed her as an editor (see 'Who embraced the fake?').

Szust was almost never questioned about her experience. No one made any attempt to contact her university or institute. One journal spotted that Szust's cover letter stated that becoming an editor would allow her to obtain a degree that she had listed as already having obtained. That journal nonetheless appointed Szust as editor.

Fifteen journals on Beall's list, 45 DOAJ journals and 48 JCR journals replied to Szust's application but did not make her an offer. These journals sent three broad types of responses: a short message acknowledging rejection; or a longer, kinder explanation of how one actually becomes an editor (first you publish papers, then you become a reviewer, and so on).

At least a dozen journals appointed Szust as editor conditional on, or strongly encouraging, some form of payment or profit (see 'Spot the predator'). In some cases, this was a direct payment, such as a subscription fee requested by one journal of US\$750 (later reduced to "ONLY \$650"), or a donation of \$50 (although Szust was accepted without paying).

Others asked Szust to organize a conference after which the presenters' papers would be published (for a fee) in a special proceedings issue. One publisher suggested that the profits be split ("60% us 40% You"). Twice, Szust was offered the opportunity to start a new journal as lead editor. One e-mail proposed "30% of the revenue earned thru you" for launching a new journal, but 20% for joining an existing journal as editor.

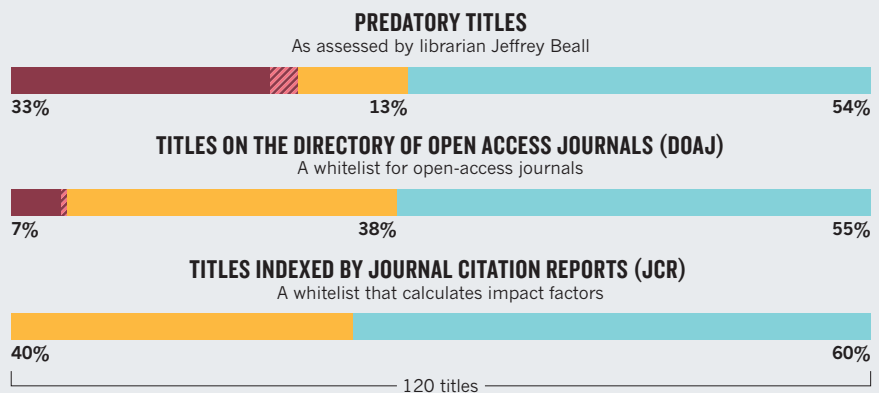
Some journals granted Szust conditional acceptance if she submitted her own papers to be published for a fee. In some cases, these paid submissions could be submitted by Szust's "Friends/Colleagues/Associates and Fellow Researcher's". Many journals were more eager for Szust to recruit paid submissions than for her to assess the quality of manuscripts. Two journals offered to waive

"One publisher suggested that the profits be split ("60% us 40% You")."

WHO EMBRACED THE FAKE?

Journals deemed predatory were much more likely to accept a fake, subpar candidate as an editor.

■ Accepted ■ Accepted, but later disputed ■ Rejected ■ No Response



fees for the publication of Szust's own paper in their journal. Another clarified that, "if you, your friends and colleagues have submitted papers successfully, just contact us, we'll pay attention to them".

Of the 120 DOAJ journals included in our study, at least 39 have since been removed from the directory (in a purge last year, several hundred were delisted for suspected editorial misconduct, non-compliance with best practices, or simply failing to reapply to the directory). Of the 8 DOAJ journals that accepted Szust as editor, 6 remain on the directory as of March 2017; none of these was also on Beall's list at the time of sampling.

PREDATORS AND PREY

In 2013, journalist John Bohannon revealed gaping holes in the peer-review system when his fictitious, purposely flawed research article was accepted for publication by 157 of 304 open-access journals to which it was submitted, contingent on payment of author fees⁴. His project did not include non-open-access journals nor did it explicitly compare titles that did or did not have an impact factor. Bohannon was criticized for targeting specific journals and for persistent correspondence with editorial boards.

We designed our study to explicitly compare whitelisted and blacklisted journals and limited our communication with them. Although some journals listed as predatory did act honourably (for instance, some sent Szust papers to review), such titles were by far the most likely to accept an unqualified candidate and to try to profit from her.

The number of active predatory journals has increased at an alarming rate¹. By 2015, more than half a million papers had been published in predatory journals, and at the end of 2016, the number of predatory journals on Beall's list (about 10,000) approached the number indexed by the DOAJ and JCR². Most are hosted by publishers (including some industry giants). Predatory publishing is becoming an organized industry.

This rise of predatory journals threatens the quality of scholarship. Without a credible editorial board, flawed scientific papers become an increasing problem. These practices also threaten to give the open-access movement a bad name³.

The pressure on academics to publish contributes. Publication counts often form the basis for research funding and career advancement. For example, in Poland and many other European countries, at least one peer-reviewed publication (regardless of quality) is a prerequisite for obtaining a PhD.

Judging the quality of a journal is not always simple, but resources are available. In the absence of Beall's blacklist, there are the JCR and DOAJ whitelists. Scholars can also check whether a journal is indexed in reputable citation databases such as Scopus or

PUBLISHING PROBLEM

Spot the predator

Excerpts from e-mails from journals accepting and rejecting a fake, unqualified candidate.

TITLES THAT ACCEPTED THE FAKE

- "... as an editor, you have to publish some of your research articles with the Journal"
- "If you want to start a new journal... you will get 30% of the revenue earned thru you"
- "It's our pleasure to add your name as our editor in chief for this journal with no responsibilities"

TITLES THAT REJECTED THE FAKE

- "One does not become an editor by sending in the CV; these positions are filled because a person has a high research profile and a solid research record"
- "The typical progression... involves developing a track record of excellent service as an ad hoc reviewer which results in an invitation to join [journal name redacted] Editorial Board"
- "... your field of research is not exactly fitting with the goals of [journal name redacted]"

the Web of Science. Criteria for assessing the quality of open-access publishers and journals also include those compiled by Beall, or through a collaboration of several community organizations, including the Committee on Publishing Ethics, the DOAJ, Open Access Scholarly Publishers Association and the World Association of Medical Editors.

A BIGGER PROBLEM

We hope that our sting brings further awareness to the problem of predatory publishing. However, a solution will require targeting the problem at its core by making publishing in illegitimate journals less attractive. Those who reward academics for publishing must make efforts to assess journal quality and to reward only best practices.

Our study, approved by an institutional ethics review board, necessitated deception. However, we made every effort to maintain a high standard of ethical conduct and transparency. We also resigned from the editorial boards that accepted Szust. We thank all editorial boards for their time.

In February 2017, we e-mailed the 49 journals originally coded as accepting Szust as an editor to inform them of our study and offer them a chance to respond. Nine replied. One journal simply acknowledged receipt,

another declared having since improved its vetting process. Six journals denied accepting (or wrongly accepting) Szust as editor; one of these claimed to have rejected Szust after performing a background check on her. We re-coded this journal as 'Rejected' and the others as 'Accepted (later disputed)'. Several journals criticized our actions and Beall's list; one asked for a link to Beall's list. We also received a tenth e-mail — a threat from an alleged legal firm (which did not have a professional domain name), that claimed responsibility for the list's disappearance following a lawsuit for "1 Billion Dollars".

We have not included journal titles in this article, in part because predatory publishers often choose names confusingly similar to reputable titles, and in part because we believe the problem is much larger than the journals we sampled. Details of the study, including all anonymized e-mail correspondence and how scholars may obtain full data for research purposes, are available (see Supplementary Information; go.nature.com/2mj2vhf).

It is difficult to predict the future editorial career of Anna O. Szust. Although journals that accepted our fraud were informed that Szust "kindly withdraws her application", her name still appears on the editorial boards listed by at least 11 journals' websites. In fact, she is listed as an editor of at least one journal to which we did not apply. She is also listed as management staff, a member of conference organizing committees, and ironically, a member of the Advisory Board of the Journals Open Access Indexing Agency whose mission it is to "increase the visibility and ease of use of open access scientific and scholarly journals". ■

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Supplementary information accompanies this article online: see go.nature.com/2mj2vhf.