

Fake news – predatory (fake?) journals: misdirections in scientometry

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Abstract. Fake news is not a new concept. It has a long history, but nowadays it is spreading with an unprecedented speed due to the availability of digital devices and the widespread use of social media platforms. Fake news being present in many areas of life, it did not avoid the scientific world either. Parallel with the appearance of Open Access, predatory journals – that could also be referred to as „fake journals” – have also made their pseudoscientific appearance in the world of science. The goal of such journals in recruiting manuscripts for publications is purely profit-oriented – a profit to be gained through deception.

The following questions arise:

1. How does the Hungarian Academy of Sciences relate to this problematic, considering the present scientometric requirements?
2. What are the measures the Academy itself can apply in order to protect the authenticity of science?
3. Furthermore, how is it possible that such measures of the Academy (e.g., scientometry) can themselves add to the misdirections that predatory journals generate?

The present study will be devoted to these issues, after providing a brief theoretical background, and a description of the present Hungarian situation as well as introducing and analyzing the nature of predatory journals, their main characteristic features, in a much more detailed fashion (publishing price, peer review process, fast publishing timelines, false impact factors, etc.). As for methodology, an ongoing empirical survey will be used, based on a questionnaire which investigates how Hungarian higher-education researchers relate to the above issues.

Keywords: scientometry, predatory journals, Open Access, scientific information

1 Introduction

At first glance, predatory journals and fake news may seem distant concepts. While the former is seen as a parasite of the scientific world, the latter was a pre-existing term that began to gain ground with the advent of the mass media. At the same time, they have several points of contact, one to mention is that the disclosure of false or fake information is particularly true for both activities, and it is carried out for the sake of profit. Thus, predatory journals can even be considered a form of fake news. Nowadays, in the age of digital content, a great deal of information can be found on the World Wide Web, but the quality of this information varies widely. From fake news through authoritative dissertations to high-quality scientific content, users have access to anything. Reliability applies not only to scientific content but also to fake news that influences everyday life. In my work, I deal with the evolution of open access and the presentation of predatory journals that increasingly undermine the credibility of the scientific world. The latter is subject to the strict scientometric requirements researchers need to meet, which are also part of my study. In the second half of my paper, I will present in detail, my ongoing large-scale survey conducted among Hungarian University professors.

2 Open Access

Open access (OA) refers to free, unrestricted online access to research outputs such as journal articles and books. OA content is open to all, with no access fees. The emergence of open access is the result of a long process in which several important stages can be highlighted. The first stage was the serial crisis that emerged in the 1970s, as a result of which journals were becoming so expensive that libraries had to cancel their subscriptions, which meant that fewer researchers were getting the latest scientific results. As a result, the dynamics of scientific development slowed down. The World Wide Web created by Tim Berners-Lee offered a solution to this problem. However, the WWW did not provide a complete solution system, but only a framework for it. An important milestone of the OA initiative was the 2001 BOIA (Budapest Open Access Initiative), which highlighted two important elements. One is the importance of self-archiving, which is most effectively accomplished through repositories. In these institutional repositories, authors can place their publications, making them widely available and ensuring their long-term availability. The other is the importance of the proliferation of alternative magazines that provide free access to content. It is important to emphasize that free access does not mean that production is also free. The next milestone was the 2003 Berlin Declaration, which emphasized support for the widespread use of the Internet, which was viewed as a global tool for the distribution of scientific knowledge. There are two conditions specified for Open Access content in the Declaration: The first is to ensure that everyone, wherever they live in the world, could have free access to the contents and that they could subsequently use, distribute and, in small numbers of copies for personal use, print the work, with appropriate references. The other is that a complete version of the work should be deposited in at least one online repository with open access and long-term archiving. Open access thus provides, in addition to quick and free access, the opportunity to overcome spatial and temporal difficulties, to make international cooperation more effective, to considerably shorten research cycles and to distribute new knowledge widely. In addition to the benefits listed above, however, the downside should also be mentioned that many low-quality and also predatory journals have appeared on the market for scientific publications, the latter will be discussed in the next section of my paper.

3 Predatory journals

Predatory or otherwise parasitic journals can also be defined as the parasites of the scientific world that broadcast fake news from the scientific world. This negative indicator comes from their role in the scientific world. With the proliferation of electronic content, and the previously described OA, and the constant need to publish, a niche market was created that has provided the base for the widespread distribution of these publications. It is important to emphasize that predatory journals do not offer a real solution to the above problems, as if a publication proves to conduct pseudoscientific activity, researchers' publications published there will not be accepted for academic promotions or for grant applications. Predatory journals are pseudoscientific publications that claim to be high-quality journals but do not differentiate or select articles for publication based on quality because their activities are solely motivated by profit. In return for the appropriate publication fees, anything is published without any professional criticism. However, this activity casts a bad light on the credibility of scientific publications. In the absence of peer review, the quality of published articles is quite diverse. From low-quality non-scientific articles to publications of real scientific value, readers will find everything in these publications. Parasitic journals are trying to achieve their goals by deception, so it is important for authors to exercise caution before publishing their latest articles anywhere. There are two groups of publishers in these journals. The first, larger group, of unsuspecting

victims who are victims of deception, and did not intentionally publish their articles in these newspapers. With due diligence and research, and noting the tell-tale signs I discuss later, the authors can ascertain the authenticity of a publication. The other, smaller group, includes those who are aware that they are publishing in a parasitic publication, and they are often forced to do so because of the “publish or perish” principle, to be discussed in the next chapter. The first who became suspicious of the parasitic activity was Jeffrey Beall, an American librarian, after receiving too many requests from newly launched online publications to publish his latest articles. However, the requests came from publishers completely unfamiliar to the librarian and were suspiciously riddled with grammatical errors.

He then began his research, resulting in a list of publications he deemed predatory in 2011, which became known as the Beall’s List, and continued to expand over the years. Of course, not everyone liked his work, so he was caught in the crossfire of ongoing attacks, which led to him finishing his work in 2017, so now only an archive version of his collection is available. In the absence of the list, the authors have a harder time, as these publications continue to proliferate, so it is very important to thoroughly investigate a journal before publishing to make sure of the publishers real intentions. Predatory publications bombard researchers with unsolicited mail to publish their latest research findings, and these requests should cause further distrust if the messages or the publication's website are full of spelling mistakes. They often choose titles and designs similar to known journals, increasing the likelihood of being mistaken for the original. The members of the editorial board are often recruited on the Internet, or are misrepresented. Reliable publications have an impact factor and are indexed by Scopus. Of course, the former can be falsified, which is often posted on the predatory journals’ website, but a genuine OA publication must be included in the DOAJ. In most cases, publishing costs are not predetermined and may include hidden costs, and copyright remains with these journals. One should also be suspicious if a publication has an extremely broad scope and inviting you to publish in the first issue of the first year of the journal since there is no way to know the quality of previous publications.

4 Scientometry

The professional productivity of researchers can be measured by various methods, and it is something that is also necessary to measure in order to decide the quality of a researcher's professional activity. We can talk about quantitative as well as qualitative indicators. Quantitative indicators show how productive these authors are, but unfortunately, recently the scientific community started to favor these at the expense of qualitative indicators. Qualitative indicators measure the impact of published publications, that is the extent to which they are cited.

One of the best-known measurement methods is the h-index, also known as the Hirsch index, which can be defined as follows: According to Hirsch (2005), the h-index is defined as: “A scientist has index h if h of his or her N_p papers have at least h citations each and the other ($N_p - h$) papers have $\leq h$ citations each.” As an example, an h-index of 13 means that among all publications by one author, 13 of these publications have received at least 13 citations each. One of the main advantages of the Hirsch index that it is suitable for both quantitative and qualitative measurements and as it is looking at a number of publications it takes into account the number of citations received by them as well. As a downside, English-language publishers have a higher h-index than, for example, when publishing in the Hungarian language, and it may also differ across disciplines. A further disadvantage of the Hirsch index is that it disregards the specifics of each discipline, which I will discuss in more detail later in this article, and also distorts the measurement results to the benefit of co-author publishers since all participants receive a

citation to the published articles. Researchers who want to build their professional careers should not ignore the need to have a sufficient number and quality of publications. This, in turn, gets them into a vicious circle as, besides their many activities and teaching, they have to constantly research, present and publish their results in order to gain a proper professional standing and achieve a higher academic degree. The latter has resulted in the appearance of the principle of „publish or perish” meaning that those who do not publish in sufficient quantities cannot advance up the scientific career ladder, so we are talking about a kind of compulsion to publish. This urge to publish, in many cases, results in certain researchers resorting to predatory journals, trying to meet expectations, or when facing a sudden publishing opportunity do not thoroughly investigate the publication.

Founded in 1825, the Hungarian Academy of Sciences is the fortress of the Hungarian scientific world, a public-service organization which among other things supports the cultivation and research of sciences, preserves the purity of scientific life and the freedom of scientific research and self-expression, and is responsible for making scientific results known to the public. Those who aspire to a higher academic degree must meet the requirements of the Academy, so they can earn better positions, receive higher salaries, publish higher-quality publications, and gain greater professional recognition. Although the exact requirements of different degrees vary from institution to institution, they all require a sufficient number of publications and conferences, both domestic and international, in addition to teaching activities. Unfortunately, the latter is closely linked to the previously mentioned "publish or perish" principle, meaning that no one can advance the scientific ladder without a sufficient number of publications. This is also supported by the fact that researchers attain a higher degree faster in the field of natural science than in the field of humanities. Nowadays, in the case of obtaining a degree, articles published in journals are preferred. As a result, the balance between scientific fields is even more upset, as scientific books and monographs all count as one publication just as a journal article, so the time and labor invested in them do not produce a return in a scientifically measurable way. As a result, representatives of a less dynamic field of expertise will have lower visibility. It follows that representatives of different disciplines should not be lumped together. Unfortunately, the measures taken by the Academy are not conducive to the current situation. To answer my third question in the abstract, the increase in quantitative expectations not only feeds the "publish or perish" principle but also transforms it into "publish and perish" over time. Even if a researcher publishes regularly, in the right quality, and in the forums that are relevant to his/her discipline, eventually will find himself/herself in a position that even that will not be sufficient to achieve professional success. This is due to the fact that the genre of publications in humanities and social sciences is ignored when measuring professional performance. According to this, as mentioned above, a monograph counts as one publication just like a journal article does, so it would be necessary to take into account the publishing specificities of each discipline, thus improving equality between those working in different fields. The automatic application of scientometric data to disciplines to which this method would not be applicable, or should be applied differently, needs to be changed, since it creates a negative impact on research in those disciplines. And that could be a solution to my question of what are the measures the Academy can apply in order to protect the authenticity of science. Wolfgang Glänzel talked about the shortcomings of scientific measurements in his work titled *Seven Myths of Science Metrics*, in which he draws attention to the question marks of measuring scientific performance. In the past, measurement data did not qualify the work of individuals or institutions, so did not count as much as today. Nowadays, however, they are extremely important but it certainly does matter how the authors try to improve their own scientific portfolio.

5 Presentation of my current research

The antecedent of my current research is a pilot research I conducted in the Visegrad Group on the relations of students and educators to Open Access. In the case of the latter, it was clear that respondents had a positive attitude towards open access, but the study also identified that respondents viewed predatory journals as a major threat, which encouraged further research to gain a better understanding of the situation in the area. The results at that time revealed that the main drawback of open access was the concerns about the quality and the authenticity of documents. Based on these findings, I began my ongoing large-scale survey, which I conduct among faculty members of Hungarian universities. Of course, before starting the survey, I formulated my hypotheses, which are as follows:

- I assume that the majority of Hungarian researchers have already published in open-access journals and, as a result, have found that their publications have reached a wider audience.
- I assume in advance that researchers would publish their articles not only in open access journals but also in the repositories of their institution, thereby ensuring their wider distribution and long-term traceability.
- I assume that pseudoscientific publishers have already tried to contact the majority of respondents in some form, but the majority of Hungarian researchers know the characteristics of predatory journals and are able to decide whether a publication has real scientific value or not.
- I assume that respondents denounce the activities of predatory publications and do not deliberately publish in such publications for the sake of their scientific advancement, and think likewise of the attitude of their colleagues, and also feel the need for unified action against these publishers.
- I assume that respondents will highlight free access as well as fast access as the benefits of open access, as well as copyright uncertainty and quality issues as the drawbacks of predatory journals.

Following the presentation of the hypotheses some information on the ongoing research: The number of responses received now exceeds 1000, which gives me the opportunity to gain a comprehensive picture of the experiences and opinions of predatory journals by domestic researchers. Thanks to the large number of filled questionnaires, the electronic survey has reached a representative size, so it is possible to get a comprehensive picture of the Hungarian situation. In addition to the basic questions and the hypotheses raised in the survey, I investigate whether there is any difference in the Open Access publishing readiness among respondents depending on the discipline they work in. A difference is expected here since almost half of the Scopus indexed domestic articles are natural science articles. Health and life science articles also account for almost 50%. According to the data, the proportion of social science articles is less than 5%. The specificity of each discipline may play a role in the development of these ratios since natural science researchers publish more and with higher frequency, unlike their counterparts in the humanities, for the former is a more dynamically developing discipline, thus allowing for a large number and continuous work. In addition, natural science researchers prefer journals (both traditional and open access), while in humanities, writing books is not excluded, but each product counts as one publication, however, the time and energy invested in it may not be necessarily proportionate. I also examine the motivation of the interviewees for their professional work, since it can be assumed that those who are motivated are more likely to publish their results in an open-access publication, thus ensuring their wider distribution. In return, their work may receive more citations. The latter is indispensable for advancing a career

in science. As mentioned above in my hypotheses, I expect the respondents to be active repository users, but beyond their own institutional repositories probably also use other methods, such as Google Scholar, Research Gate, Academia.edu or their personal homepage. One of the best-known surfaces of electronic publication in Hungary is the Library of Hungarian Scientific Works (MTMT), which is not a repository but a national publication database, maintained and operated by the Academy as regulated by law. MTMT is a great initiative to measure the scientific performance of domestic researchers, mainly because it is expected to be regularly maintained, thus providing an opportunity to give a realistic picture of an author's scientific performance. Every Hungarian scientist is expected to maintain a personal data sheet in MTMT with their personal bibliography. In doctoral programs, habilitation and grant applications only this bibliography is recognized. In addition to its numerous advantages, its drawbacks must be mentioned. Unfortunately, there is no rule to indicate the second or multiple editions of scientific publications, and the genre categorization of scientific publications differs from that used in scientific life and is inconsistent and incomplete. Finally, it misinterprets the scientific nature of publications, sometimes too narrowly and sometimes too broadly.

As part of my research, I examine how many respondents use the MTMT interface regularly. This is also important for their scientific advancement because here the authors have the opportunity to easily compile bibliographies, publication lists, which can be used in applications. The answers received here may be related to the motivational responses, which suggest that those who are motivated tend to care for this surface regularly, while those who may be burnt out or staying on the job purely for financial purposes are likely to pay less attention to it. In addition, I examine how many of the respondents have already published in open access journals and, if they have not, are open to this form of publication or tend to be reluctant to do so. One of the key questions of the survey is whether those who have already published in an open-access publication have experienced an increase in their scientific visibility due to open access. International experience shows a clear increase in the citation of researchers, who make their results freely available. I believe that this will not be different for domestic respondents.

Furthermore, I examine whether the authors have an ORCID ID. The essence of this is to make the authors clearly identifiable, since identical names are common, which can cause problems in the performance measurement process. Recently, several publishers have required this free ID when accepting manuscripts. The research questions presented above were primarily concerned with scientific visibility, let me continue with the subject of predatory journals playing a dominant role in the survey. In this part of the research, I examine the relations between those working in Hungarian higher education and predatory journals. I would like to know what percentage of respondents are familiar with the concept of predatory journals, how many have heard of it, and how many of them have been contacted by such publishers. I assume that the majority has already received some kind of request for editorial board membership or publication. I investigate whether researchers recognize the characteristics of predatory publications and the extent to which they can select the appropriate ones from a list, as beyond the aforementioned critical sense, it is necessary to know the characteristics of fake journals in order to unequivocally determine the quality of a publication. This can be connected to the survey's question of whether the author thoroughly researches each publication before publishing his or her articles there. According to my preliminary hypotheses, I believe that the vast majority of respondents are able to make a good decision about a particular journal. For the remainder of the questionnaire, I use Likert-scale measurement to get a more comprehensive picture. I would like to know the respondents' opinion on how dangerous fake publications are to the scientific world. I believe that the majority of those surveyed see this content as a real threat, as it severely undermines belief in science and, in addition to often providing false information, may even unduly favor those who publish in this type of publication as opposed to those publishing in legitimate journals. I would like to know how many of the

researchers attribute some advantage to predatory journals. This advantage may come from the rapid publication process, which is feasible due to lack of peer review, fueled by the previously discussed issue of publish or perish, however, does not provide a real solution for it. Of course, this cannot be considered an advantage in the strict sense, as it is at the expense of quality. Part of this question is whether respondents think their colleagues would voluntarily publish in such journals to advance their careers. This is certainly something to condemn, as it does not help the progress of science but cannot be ruled out as a real possibility. There is no doubt that there are players in the scientific world who are not just unsuspecting victims but publish their works in such papers for some specific reason. In the absence of real results, it is sufficient to pay the appropriate publication fee and the researcher can already possess several international articles that can be listed when submitting applications. However, if a journal proves to be predatory, then the publications published within will not be accounted for in any form whatsoever. If an author encounters a pseudoscientific publication, he or she may report it to MTMT. I would also like to know how respondents feel about their peers' ability to decide whether or not a journal carries out pseudoscientific activity. I believe that the majority of respondents have already been contacted by such publications, and as detailed above in the selection of criteria, and are likely able to decide whether they are dealing with a legitimate OA journal.

My research is currently nearing the final stage of data collection. The results are expected to be published by mid 2020, which I hope will provide a comprehensive picture of the attitude of Hungarian educators towards OA and also to predatory journals.

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