PREDATORY JOURNALS POSE A THREAT TO THE DISSEMINATION OF SCIENCE

MOHAMMAD SAL MOSLEHIAN[1] and ANTONIO M. PERALTA[2*]

Abstract. In this note, we alert on the dangers caused by predatory journals to science, show how these journals may deceive researchers, how we can recognize them, and finally suggest ways to counter them.

What is the threat?

Predatory journals are those journals with very low standards that publish almost any article at a cost and in the shortest time without going through the standard peer-review process or with superficial refereeing. However, the principal aim of these journals is to earn money [7], with an (almost complete) absence of promoting science! When a predatory journal publishes an article without a proper academic review, it may mislead researchers on aspects of methodology and epistemology; see [1]. In spite of claiming to adhere to strict peer review and publishing ethics, predatory publishers do not have the necessary transparency and honesty. In fact, they have caused serious damage to the development of global knowledge by blending true and false. Publishers of these journals have assumed a false premise, namely, finding the truth is the task of the people who are using the papers! Therefore, everyone should be cautious in referring to articles in these journals.

In the history of science, and particularly in the development of mathematics, the credibility and liability of the advances are supported by an anonymous peer review system. This process is able to revisit the results and proofs and depurate bugs. In the peer review system, the anonymous contribution by referees requires generous collaboration from their side, a task that demands time to write a fair report checking all details. So, how can the whole process remain trustable if the reviewer only has a few days to prepare a report?

What if the reliability of the published results were called into question? We could no longer build our new advances without confirming, over and over again, each of the references and tools used. In humankind's evolution, a heritage through contrasted written sources saves time and allows subsequent generations to access knowledge from the past.

2020 *Mathematics Subject Classification.* 01A80.

Key words and phrases. Predatory journal; peer review; database.

How may predatory journals deceive us?

Predatory journals sometimes use innovative methods to lure less experienced researchers to publish their findings. For example, by inviting them to join the editorial board of the journals, asking them to be guest editors of a special issue, or promising a scientific review in the shortest possible time.

In addition, with more recent strategies, predatory publishers are also combined with even more fake or predatory research forums and platforms, meetings, and conferences that offer the possibility of being a keynote speaker or a session organizer in a tourist place, where the scientific subject does not really matter.

Despite the abundance of information and alerts, scientists might face new risks caused by the behaviour of predatory journals when combined with new arising technological tools. For example, quite soon it will be hard for editors and, maybe, even for experts, to distinguish between human-written and artificial-intelligence-written papers. This is already happening in several disciplines in science, art, literature, etc., at least up to a medium level.

What is the problem with scientometrics?

The articles published by predatory journals are very often on the fringe and simple topics. These articles are cited by the authors themselves and their close collaborators. It is true that we should not restrict the development of science by imposing monolithic thinking, diversity is always necessary for enriching. But some studies are artificially motivated and contribute no novelties in any sense.

According to the current rate of contributions from predatory journals, quickly and possibly with some citation manipulation, these journals can achieve a misleading high-impact factor in Scopus and Web of Science. Many specialized journals in pure mathematics have appeared in the second or third quartile of the JCR list, while some predatory journals have been in the first or second quartile of this JCR ranking.

Some universities pay incentives for publishing in the first or second quartiles of JCR-listed journals of Web of Science to get a good ranking among other countries, but this is a waste of money when publishing in fake or predatory journals. In general, for most academic disciplines, including mathematics, there is a large number of reputed research journals where researchers can publish their strong results.

Scholars who publish in predatory journals are most probably not aware of the nature of these journals, cannot do substantial research, or need papers for getting an academic degree, promotion to a higher academic rank, or obtaining research grants; cf. [5]. Unfortunately, "*some authors turn to these outlets fully aware of their low quality; these scholars willingly pay to publish in predatory journals to add a line to their CVs*" [6]. We should emphasize that publishing articles in fake or predatory

journals damage the professional reputation of universities and scholars who publish there. It is always better for researchers, in particular young ones, to prioritize their credibility than hosting doubt during the rest of their careers.

How do we recognize predatory journals?

What are the available tools to handle the risk? The first list of open-access predatory publishers, named Beall's list after the first reports by the American librarian Jeffrey Beall, was blogged in 2008. In early 2017, the blog ceased its activity following complaints and threats of legal action from a number of publishers. However, Beall's list has been developed by others; see [2]. A new for-profit database of predatory journals is offered by the company Cabell's International [3].

It used to be a lot easier to determine whether a journal was predatory or not. However, in recent years, predatory journals have found deceitful ways to look more and more like prestigious journals. Anyway, there are some serious flaws in their review processes. Namely, referees are not selected by the editors from among the prominent experts. Editors of these journals are mostly for the show and ceremonial and do not play a meaningful role. The huge size of some editorial boards gives a clear idea of the weak role of these boards in the selection and review processes. Reports are generally considered selectively by these journals; which means that negative reports are ignored whereas positive ones are kept.

In mathematics, when a journal gets de-indexed (or not indexed at all) by MathSciNet or zbMATH Open, there is almost always a quality problem, and a clear hint to be worried about the journal's credibility. Fortunately, the mathematical databases of zbMATH Open and MathSciNet have started stopping indexing predatory journals.

Some universities and research agencies have a blacklist of fake or predatory journals. But researchers object to this list saying that when a journal is indexed by Scopus or Web of Science and has rather a high impact factor, why does a university consider that journal invalid? Therefore, it seems necessary that Scopus and Web of Science follow the line marked by MathSciNet and zbMATH Open, and take a more serious effort to remove such journals from their databases after an accurate examination.

What can we do?

Universities and senior researchers should warn young scholars not to submit papers to predatory journals and encourage them not to review any papers for these journals. Furthermore, they should not assign any value to the articles published in these journals. It is challenging to estimate how many of these journals could be potentially reoriented to an ethical policy according to high-quality standards; the pressure from a well-informed and committed research community could produce the change.

An appropriate way may be to provide a white list of prestigious journals or reputed publishers for young researchers.

It is essential that good researchers do not fall into the trap of these predatory publishers. Young researchers can consult senior colleagues having enough experience in publishing papers when choosing a journal. The data basis of MathSciNet and zbMATH Open can be also very helpful. Web pages, blogs, and serious scientific forums treat this problem in detail, providing useful tools and information for all kinds of researchers.

Doing excellent research is always a difficult task. We should spend sufficient time and energy to find an interesting problem or a challenging question, create a new idea, and obtain deep and important results with innovative proofs and impactful consequences. "Good" results of our research will be eventually published in an appropriate journal even if the referee process takes too long. The seminal work of Per Enflo on the invariant subspace problem was under review for about 3 years in Acta Mathematica; see [4]. We should not waste a good idea for the rush of a prompt publication in a poor journal.

References

[1] Akça, S.; Akbulut, M. *Are predatory journals contaminating science? An analysis on the Cabells' Predatory Report*, J. Acad. Librerian. 2021, 47.

[2] *Beall's list of potential predatory journals and publishers.* `https://beallslist.net/`

[3] *Cabells' predatory journal violations.* `https://www2.cabells.com/predatory-criteria`.

[4] Enflo, P. H.; Moslehian, M. S.; Seoane-Sepúlveda, J. B. *A history of solving some famous problems in mathematical analysis.* Br. J. Hist. Math. 37 (2022), no. 1, 64–80.

[5] Frandsen, T. *Why do researchers decide to publish in questionable journals? A review of the literature.* Learn Pub. 2019, 32, 57–62.

[6] Grudniewicz, A.; Moher, D.; Cobey, K.D. and 32 co-authors, *Predatory journals: no definition, no defence.* Nature. Comment, Vol 576, 12 December 2019.

[7] Grzybowski, A.; Patryn, R.; Sak, J. *Predatory journals and dishonesty in science.* Clinics in Dermatology, (2017) 35 (6), 607-610. `https://doi.org/10.1016/j.clindermatol.2017.07.003`

[8] Moslehian, M. S. *Impact factor, an inadequate yardstick*, Eur. Math. Soc. Mag. 2021. 120, 40-42. `https://doi.org/10.4171/MAG-19`

Department of Pure Mathematics, Ferdowsi University of Mashhad, P. O. Box 1159, Mashhad 91775, Iran

Email address: `moslehian@um.ac.ir; moslehian@yahoo.com`

Instituto de Matemáticas IMAG. Departamento de Análisis Matemático, Facultad de Ciencias. Universidad de Granada, Granada, 18071, Spain.

Email address: `aperalta@ugr.es`