Never mind predatory publishers… what about 'grey' publishers?

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Abstract

The *Harbingers* project, which studied the working lives and scholarly communication behaviour of early career researchers (ECRs) over 6 years, found evidence of changing attitudes to questionable (grey) publishing. Thus, whilst predatory publishers have come to be treated with equanimity, as a problem easily dealt with, there was growing concern with the high volume of low-grade research being generated, some of which by 'grey' open access publishers for want of a better name (questionable and non-standard have also been used). With the recent announcement (2023) that the government of Malaysia (a *Harbinger* case country) is not providing Article Processing Charges (APCs) for articles published by *MDPI*, *Frontiers* and *Hindawi* on quality and cost grounds, we set out to see what lay behind this decision and whether other countries exhibited similar concerns. Information was obtained by asking *Harbinger* country leads, mostly embedded in research universities, from Australia, China, France, Israel, Malaysia, Poland, Spain, UK, and the US to conduct desk research to establish what is happening. It was found that countries, like ECRs, appear to have formed into two different camps, with China, Poland, France, and Spain joining Malaysia in the camp of those who felt concerned about these publishers and the UK, US, Israel, and Australia belonging to the camp of the unconcerned. Explanations for the split are furnished and whether the Malaysian position will prevail elsewhere is considered. Finally, in this paper, we have aired issues/concerns, rather than provided robust, systematic data. For a systematic study we shall have to wait for the fuller study we are hoping to conduct.

Keywords

1. Introduction

Harbingers[1] is an international collaborative of researchers from nine countries (Australia, China, France, Israel, Malaysia, Poland, Spain, UK, and US[2]). Monitoring on a regular basis what early career researchers (ECRs) –tomorrow's leading professors, influencers, and decision makers– are up to, we, as a research group, seek to forecast what changes might occur to scholarly communications and research practices down the line. In this paper, we focus on questionable publishing practices, an undertaking prompted by the findings of the *Sloan*-funded *Harbingers-2* study (**Nicholas** *et al.*, 2023a). The study, which inspected every conceivable aspect of the scholarly communications system from the perspective of the millennial-generation early career researchers during the two demanding years of the pandemic, identified unethical/questionable practices as a crucially important 'crack' in the scholarly system. Indeed, with nearly two-thirds of ECRs saying that they were aware of questionable practices, and a third believing that the pandemic had fanned the flames, questionable practices were ranked third in importance among the vulnerabilities found, although in some ways they may be seen as the biggest overall threat because they undermine trust in the whole system. It is against the backdrop of these findings that we set out here to revisit a topic we recently reported on in this very journal: ECRs' views and actual practices of publishing in questionable open access (OA) journals (**Nicholas** *et al.*, 2023b).

2. Background and context

The problem of questionable publishers came to the fore in the scholarly world once a host of studies found predatory publishing to be a prevalent phenomenon among academics from all career levels (**Alecci**, 2018; **Alrawadieh**, 2018; **Elliott** *et al.*, 2022; **Eykens** *et al.*, 2019; **Frandsen**, 2022; **Perlin**; **Imasato**; **Borenstein**, 2018; **Pyne**, 2017; **Shaghaei** *et al.*, 2018; **Wallace**; **Perri**, 2018), and from all over the globe, inclusive of high- and upper-middle-income countries (*IAP*, 2022; **Bagues**; **Sylos-Labini**; **Zinovyeva**, 2017; **Elliott** *et al.*, 2022; **Eykens** *et al.*, 2019; **Moher** *et al.*, 2017; **Shaghaei** *et al.*, 2018), rather than limited to novice researchers from developing countries, as first explorations seemed to indicate (**Alrawadieh**, 2018; **Eykens** *et al.*, 2019; **Frandsen**, 2022; **Perlin**; **Imasato**; **Borenstein**, 2018; **Pyne**, 2017; **Shaghaei** *et al.*, 2018; **Wallace**; **Perri**, 2018; **Demir**, 2018; **Frandsen**, 2017; **Kurt**, 2018; **McCann**; **Polacsek**, 2018; **Moher**; **Srivastava**, 2015; **Moher** *et al.*, 2017; **Nobes**; **Harris**, 2019; **Shen**; **Björk**, 2015; **Xia** *et al.*, 2015). Still, over the years a change seemed to be taking place when it came to what **Gallent-Torres** (2022) aptly calls non-standard publishing, as the evidence emerging from the *Harbingers* project clearly indicated (**Nicholas** *et al.*, 2021; 2023b).

Indeed, running counter to the hue and cry raised about predatory publishing for quite some time, our ECR interviewees not only found predatory journals to be of no real concern, but even treated the phenomenon as a non-issue, something that barely merited a mention, certainly not a feature of their research world. Being well-aware of the risk to their careers that publishing in questionable journals posed, and informed enough to be able to identify such journals readily enough, they were not tempted to go for the predatory option. In any case, most published with senior colleagues who were knowledgeable on the topic and could have prevented them (if necessary) from falling into the predatory publishing trap. However, whilst predatory journals, thus, turned out to be 'old hat' to ECRs, not so when it came to what they identified as the real problem facing them, indeed, facing the entire research undertaking: a general lowering of scholarly standards that have been taking place as a result of increased opportunities to publish.

That their thinking should be along these lines is perhaps not very surprising, for the problem of questionable publishing has by now become much more nuanced and complex. In fact, predation in academic publishing now needs to be seen as a spectrum, with varying types and degrees of illegitimacy, with journals and publishers of multiple shades of grey

occupying borderline or ambiguous niches between predation and legitimacy (**Siler**, 2020). Thus, a journal may be increasingly/decreasingly predatory (or legitimate) in comparison to some standard or criteria, whether ideal or in relative contrast to one another (**Teixeira-da-Silva** *et al.*, 2021). Indeed, although our interviewees did not actually use the term 'grey publishers' in their discussions of questionable research practices, the conversation often switched (especially in France, Spain, and Poland) to their feeling that large volumes of low-quality research were being produced, with occasional blame for this situation being placed (unsolicited) at the door of *MDPI*[3] and *Frontiers*[4].

It must be kept in mind, of course, that these two publishers might have been singled out by our study participants because they have drawn particular attention to themselves by becoming bigger than most 'traditional' publishers, as *MDPI*'s remarkable growth amply illustrates (**Petrou**, 2020). Indeed, the number of ECRs among the *Harbingers-2* interviewees, who thought that these publishers were simply fast, friendly, efficient, and receptive, was similar to the number of those who found fault with them. Admittedly, unlike predatory publishers, some 'grey' journals have respectable citation scores –the ultimate judge and jury on their worth. Also, unlike predatory publishers, 'grey' publishers do not deliberately and systematically set out to deceive authors or lie about their metrics and they run fair peer review processes (until it comes to special issues, it seems, a point we will discuss shortly). Nevertheless, in a recent study that analysed the behaviour of 53 *MDPI*-journals that were *Clarivate*'s *Journal Citation Reports* (*JCR*) indexed in 2019, some of their characteristics were found to be equitable to those of predatory journals, such as their tendency to use very similar names to other journals with established reputations (**Oviedo-García**, 2023).

Still, some of the practices employed are likely, indeed, to make them suspect in the eyes of some. Thus, for example, the direct solicitation of potential authors raises quite a few eyebrows, although how otherwise can new journals start if the editor designate does not 'personally' invite people they know to submit articles or ask the publisher to do so on their behalf? The problem is that at times these publishers select potential authors to approach from a database, which is so badly put together that the recipient is not in the field which the journal covers. Also, authors and reviewers are sometimes offered discounts and incentives, which, given the accepted ways of doing things in the scholarly world, may be seen as commercial. According to **Oviedo-García** (2023), at least where *JCR* indexed *MDPI*-journals are concerned, they also have higher degrees of self-citation rates than found in 'traditional' journals and high citations rates from other *MDPI*-journals, the latter of which, of course, suggests citation cartels. However, perhaps above all, it is the practice of publishing huge quantities of special issues that gives these publishers truly bad publicity, for the sheer number of these publications obviously makes it impossible to guarantee minimum peer-review standards. Take just one example: according to an unpublished analysis, cited in **Brainard** (2023), in 2022 nearly 100 *MDPI* journals that have impact factors published more than 17,000 special issues, containing 187,000 articles.

3. Malaysia blows the whistle

Alarm bells truly started ringing for us when a member of the *Harbingers* collaborative, the Malaysian representative, informed the rest of the group of the Malaysian *Ministry of Higher Education*'s decision to refrain from using public funding to cover APCs for publishing with *MDPI*, *Frontiers*, and also *Hindawi*[5] (**Japri**, 2023). The decision is certainly indicative of a broader concern, which has at its heart the need for a more judicious allocation of resources that would focus on supporting research activities that contribute to the advancement of knowledge and societal development. Thus, plainly aiming at encouraging universities to exercise caution in their choice of publication venues, the *Ministry* seems to be advocating a more strategic approach to research dissemination, which would consider factors beyond the mere open-access nature of the journal and its indexation status (in *Web of Science* and/or *Scopus*). Among these factors the quality of peer review, the impact of the research, and the alignment of the publication with the university's research objectives are all seen as playing crucial roles in ensuring that research outputs contribute meaningfully to their respective fields.

However, beyond that, the *Ministry*'s decision seems to have been sparked by the significant surge in the quantity of papers authored by Malaysian researchers that were published in *MDPI*'s *Scopus*-indexed journals over consecutive years, possibly coupled with recent criticisms related to *MDPI*'s publishing practices. Thus, as an unpublished analysis has shown, the number of Malaysian publications in *MDPI Scopus*-indexed journals has risen from 698 in 2018 to 1227 in 2019, 2281 in 2020, 3908 in 2021, and 4768 in 2022 –plainly a substantial growth, amounting to nearly 580 percent during this time span. This, when fast-growing OA journals, of which *MDPI*, *Frontiers* and *Hindawi* are in all probability the best known, increasingly come under fire for their non-standard practices, some of which are seen as smacking of overly commercial considerations, if not predatory approaches, such as aggressive marketing, lenient peer review for the sake of achieving speed and quantity of publications, significant author fees, and the aforementioned overabundant publishing of special issues and manipulations of citations (**Brockington**, 2022; **Crosetto**, 2021; **Gallent-Torres**, 2022; **Oviedo-García**, 2023).

It is quite conceivable then that the straw that might have broken the camel's back in Malaysia was the recent delisting of 19 *Hindawi* and two *MDPI* journals from *Clarivate*'s *World of Science* (*WoS*) database, entailing the journals' losing their impact factor, which carries so much weight with authors and institutions (**Brainard**, 2023). The move certainly cannot be dismissed lightly, especially as according to an expert opinion, cited in **Brainard** (2023), the expectation is that this initial delisting is only the tip of the iceberg.

Interestingly, despite the *Ministry*'s decision, at least one first-line research university in Malaysia still permits accepting APCs from private or international funding sources for publishing in *MDPI*, *Frontiers* and *Hindawi* journals, as long as

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they are indexed in *WoS* or *Scopus*, indeed, recognises such publications for assessment. Confusing signals then being transmitted, perhaps, further muddying the waters for Malaysian researchers, who (at least until recently) seemed oblivious to the problem of grey journals –our interviewees, unlike their counterparts in Poland, France, and Spain, were happy to publish in any journal, if it was indexed in *WoS*/*Scopus* (**Nicholas** *et al.*, 2022).

The question that naturally follows was whether these developments were unique to Malaysia. After all, publishing is a genuinely international business, with strong patterns of globalisation. Thus, we set out to see what the situation was in our other member countries: whether they exhibited the same concerns, and if they did, whether they were responding to the challenge similarly or differently and whether we have a trend on our hands.

4. So, what of other countries?

Data were obtained by asking country leads (mostly senior researchers embedded in research universities) from Australia, China, France, Israel, Poland, Spain, UK, and US to conduct desk research to establish what is going on. Interestingly, the picture that formed in result show that there are two different camps when it comes to 'grey' publishers, with China, France, Spain, and (less so) Poland joining Malaysia in the camp of those who felt concerned about these publishers and Australia, Israel, UK, and the US, belonging to the camp of the unconcerned.

5. Countries with concerns

China

Clearly, a lot of disquiet about some publishers has been long felt in China, entailing an assertive and direct governmental approach. Indeed, since 2020 the *Chinese Academy of Sciences* has been publishing a 'warning journals list' (blacklist) every year, with many of the journals –more than half in the 2023 list– published by *MDPI*, *Hindawi* or *Frontiers*. Inclusion of a journal in the list was determined based on several indicators: many factual and/or grammatical and/or spelling errors in the articles published; attempts to appoint editors without their authorisation; too many papers published in each issue; quick and questionable-quality peer review processes; production of large numbers of new titles.

Indeed, popular, and social media reports mention more than 20 universities and research institutions in China that have publicly stated their intention not to consider papers published in the 'warning journals list' for assessment purposes. It should be noted, however, that most of these universities and research hospitals are not first-line institutions, where the guidance of the list has been sorely needed, as they seem to face problems of academic misconduct, stemming from the requirement that clinicians seeking professional titles publish research papers.

However, whilst the approach to 'grey' publishers is thus not invariably defined as a formal policy in China, many major Chinese scientific research institutions are wary in their treatment of 'grey' journals, often excluding them from assessment procedures, as part and parcel of their reservations and prejudices about OA publishing in general. Not that this state of affairs has had much of an influence on institutions' willingness to fund the payment of APCs for publishing in gold OA journals: unless the journals are high-level ones, such as journals with a high impact factor or a good reputation, researchers who want to do so need to pay APCs themselves. In any case, despite the unease surrounding publishing in 'grey' journals, there are many papers authored by Chinese academics, if often from second-level universities, to be found in them. Plainly, the short peer review procedure, the fast turnaround times of publication, the relatively more standardised/higher quality compared to local journals, and the lack of discrimination against young Chinese authors are strong incentives, especially as *MDPI*, with its huge offices in China, is a well-known company.

Spain

In Spain, too, things are far from straightforward, although journals from these publishers have been blacklisted. Thus, the central body in charge of the evaluations of research achievements for promotion purposes, *Aneca* (*Agencia Nacional de Evaluación de la Calidad y Acreditación*) issued as far back as 2021 a report (*Aneca*, 2021) on open-access publishers which questioned many journals, particularly journals from *MDPI* and *Frontiers*, said to exhibit 'anomalous behaviour'.
https://www.aneca.es

Previously, many of the disciplinary committees, which evaluate the research accomplishments of universities every six years for budgetary reasons, stopped positively considering publication in certain journals, many of them *MDPI*.

The *Aneca* report was highly controversial because not all the measurement criteria used were considered adequate or logical. Indeed, ECRs feel confused, unable to understand why *JCR* indexed journals are not suitable for obtaining a good assessment. To complicate matters even further, two years later, *Aneca* withdrew its report, claiming to justify the withdrawal on the grounds of a more overarching need to reform the research evaluation models in Spain, towards more qualitative and less bibliometric evaluation models. More specifically, this need is for evaluating of the quality of scientific articles, rather than the quality of the journals in which they are published only, and, in addition, to consider the impact of the research from a broader perspective.

In any case, the funding of APCs is at the discretion of the individual university, and in general, it is allowed even where 'grey' publishers are concerned.

France

The picture is not that clear in France, either, although there is a much controversy in respect to the status of *Frontiers* and *MDPI*. On the one hand, more and more French papers are published in 'grey' journals because, as in the case of China, many researchers welcome the opportunity to publish their papers easily and quickly. This is especially so where the journals are indexed in *Scopus* and *WoS*, for then they are admissible in the research assessment process. On the other hand, it is said by some that researchers and more specifically early career researchers, risk their reputation by publishing in such journals, which, as rumour in France has it, are not well cited or, indeed, not cited at all, a rumour that is not sufficiently grounded. Still, as noted, given that the scientific value of some 'grey' journals have been contested, indeed, some have even been delisted from *WoS*, they are increasingly seen as questionable, with some institutions displaying their concerns by requesting researchers not pay the APCs for grey journals. There are also worries among French ECRs (and Polish ones too, as we shall see) that assessors will look less favourably at papers emanating from grey publishers. The case of *MDPI* has not been helped by the controversies associated with the publishing of thematic issues, with researchers denouncing them: *https://paolocrosetto.wordpress.com/blog*

Frontiers is more respected than *MDPI*, because of a rise in standards and their publication do attract more citations *https://www.frontiersin.org/about/impact#jif-and-citescore*

Poland

In Poland, it is the problem of *MDPI*, in particular, that has been discussed, indeed, still being discussed, but nothing has been resolved. Following the parameterization (measurement) of Polish universities, there has been a significant increase in publications by Polish authors in journals such as *MDPI* and other gold open access journals, which are regarded as venues that enable easy publishing, with a review process that takes a very short time. With the assembling of a copious publishing record of paramount importance for Polish academics, as their eligibility to get their doctorate and habilitation in each discipline at a given university largely depends on it, plainly the ease and speed of publishing their work becomes an important consideration.

As to the current situation –at least one university is said to have stopped funding APCs for publishing in *MDPI* journals. The Polish media reports that a great deal of Polish taxpayers' money, i.e., from the state budget, is spent on the publishing of articles in *MDPI* journals, but so far nothing has been heard on this from the *Ministry of Education and Science*. In fact, the *Ministry*'s list of scored journals, assembled for assessment purposes, which includes more than 30,000 *WoS/Scopus* –indexed and Polish titles, even includes some journals published by *MDPI*. Nevertheless, all those who want to do a 'habilitation' or apply for a professorship try to make sure that they have a variety of journals on their publications list, and they certainly do not rely solely on *MDPI* because of the possibility that reviewers will criticise them for doing so.

Finally, Poland is looking to see how bigger and richer countries are dealing with the problem before they take any action.

6. Countries without concerns

Australia

Australia is different from countries, such as Malaysia, in that government/authorities usually do not interfere with publishing decisions, so that each university decides on its own when to fund a requested APC. However, not all universities have a specific OA policy, and those that have do not go beyond a generally felt strong opposition to paying for publishing OA in hybrid journals (**Wakeling** *et al.*, 2022). There is certainly no policy on the level of individual publishers –grey or otherwise.

Still, universities tend to favour white lists over black lists, so instead of banning publishing in certain journals, they favour others and encourage publishing in them. Universities might have different approaches to implementing this unwritten policy, but the basis for their decision-taking in these matters are usually the points awarded to a specific journal in their internal evaluations and promotions procedures. Thus, for example, if at a given university the achievements of academics are measured against *SCImago* (*Scopus* list), with Q1 and Q2 journals from that list accorded more points, researchers are encouraged to publish in journals listed in *Scopus*, be they 'traditional' or 'grey'. University libraries usually have *LibGuides* about publishing articles in which they warn researchers about predatory publishers. However, instead of blacklisting publishers they encourage researchers to follow best practices such as *Think, Check & Submit* protocols in their publishing decisions. Thus, the *LibGuide* for *Charles Sturt University* names *MDPI*, but it says it has a range of journals so authors need to decide case by case and does not say do not publish in *MDPI*. *https://thinkchecksubmit.org* *https://libguides.csu.edu.au/WhereToPublish/predatory#s-lg-box-22384022*

Israel

Publishing policies in Israel are not based on any nation-wide policy as to the legitimacy (or not) of journals, so that it is up to each faculty member to decide where to publish their work. University libraries do provide individual help, such as recommending *WoS* and *Scopus* indexed journals or warning against journals on *Cabells* list, and hold training sessions for those who want them.

Still, there is a list of journals widely used by universities and researchers to determine which journals are preferred venues for publication, originally assembled by the *Council for Higher Education*, through its *Planning and Budgeting Committee*, to serve institutional budgeting purposes. Thus, although the list was meant to serve solely as a means for

assessing the quality of a university's publication output, as measured by the impact factors of journals in which the publications appear, its use is customarily taken to vouch for the quality of the journals therein.

As to funding APCs, Israeli universities pay APCs for publishing in highly ranked journals (top ten in a subject area) and/or for publishing in journals that offer a discount obtained through deals with publishers.

UK

Grey publishers are not a big issue in the UK and, indeed, have become part of the scholarly infrastructure and welcomed to the top table by Jisc, who have conducted big deals with them on behalf of UK universities and have obtained APC discounts. ECRs indeed perceived journals particularly *Frontiers* as prestigious in their field and *MDPI* are admired because of their speed in processing. It is possible that their OA credentials protect them from criticism because the UK is very pro-open science and journals appear in the authoritative *DOAJ* directory. Librarians consulted were willing to pay APCs because the publishers were members of *OASPA* and the journals were in *DOAJ*, key marks of accessibility.

Nevertheless, there is still some unease about these publishers' outputs. The unease stems from direct and inappropriate solicitation of authors and editors annoying researchers by asking them to write papers, review papers or even edit special issues in disciplines which were not remotely related to their expertise. It is also believed that this aggressive targeting has increased in the last few years, presumably driven by internal targets for increases in submissions. *Frontiers* has admitted as such to some universities. This can lead to authors being often approached to write reviews and other non-research articles that universities may be unable to fund. Also, while not perhaps seeing them as promoting paper mills, although guest editors and salaried academic editors for *MDPI* were found to coordinate sale of authorship across four different *MDPI* journals, totalling over 20 papers (**Grove**, 2020), but as one university librarian said *some of their content does tend towards slicing and dicing, and amount to vanity publishing.*

US

In the US, there is no national rule, other than rules for federally funded research outputs. Each university sets its own standards for what journals count toward tenure and typically most universities leave that up to the academic unit to decide what are the best journals. Many universities now use a central metrics system to measure the impact and outputs of the faculty, but these are typically not used for tenure or retention decisions. The one unit on campus that pays most attention to research dissemination is usually the library. If the library pays for OA fees, they usually will not pay for hybrid journal fees and some may have a black or white list of ones they will pay. Libraries used to often use *Beall*'s list years ago, but it is more individualized now. Thus, for example, in some universities eligible publications must be listed in the *Directory of Open Access Journals* (*DOAJ*) or the publisher must be a member of the *Open Access Scholarly Publishers Association* (*OASPA*). Measured by these parameters, the three publishers discussed here would meet the criteria.

7. Conclusions

It seems that countries form a continuum in their approach to 'grey' publishers, from those who seem to have little concerns about them –Australia, Israel, UK, and US– to those growingly concerned about the phenomenon, with Malaysia the most concerned, but China, Poland, France, and Spain also exhibiting signs of unease. The level of concern is perhaps traceable to the assessment procedures in place in the different countries: the more a country relies on quantitative productivity coupled with citation-data based bibliometric indicators to measure research achievements, the more problematic the role of 'grey' publishers becomes. One wonders then whether the drip, drip news of retractions, special editions, government interventions and rumours might change the balance, with more countries moving into the 'concerned' camp, and, as a result, possibly changing their approach to research assessment policies. The greater presence of 'grey' publishers in the scholarly world may turn out to be then a blessing in disguise, which will spur on the long-hoped for change in the model for evaluating a scientist's work, whereby the currently prevalent 'bean-counting,' both where the number of publications and the citation score of publications are concerned, will be enriched by other measures. Indeed, in France the transition is already taking place, slowly but surely, and publishing papers in indexed journals is no longer considered as the only criterion of assessing research, whilst for Poland this is thought to be a pipe dream, at least for the time being. Thus, this paper, largely meant to be an opinion piece, has laid the ground for future systematic research on the part of the *Harbingers* group.

8. Notes

1. The original, 4-year (2016-2019), longitudinal *Harbingers-1* research project explored the working lives and scholarly communication behaviour of 116 junior science and social science researchers from eight countries (China, France, Malaysia, Poland, Russia, Spain, UK and US). Its 2-year extension (2020-2022), *Harbingers-2 –Early Career Researchers*, and the *Pandemic research project*.
http://ciber-research.com/harbingers-2

funded by the *Alfred P. Sloan Foundation*, enabled the investigation to continue to around 170 science and social science ECRs from the same countries, at a time when the pandemic brought about unprecedented change in scholars' circumstances.

2. While 8 countries have contributed data for this paper, Australia and Israel were not original *Harbinger* case studies.

3. *MDPI* is a publisher of 428 open access journals, including 419 peer-reviewed journals and 9 conference journals. Founded in 1996 and based in Basel, Switzerland, it has offices in Beijing, Wuhan, Tianjin and Nanjing (China), Barcelona

(Spain), Belgrade and Novi Sad (Serbia), Manchester (UK), Tokyo (Japan), Cluj, and Bucharest (Romania), Toronto (Canada), Kraków (Poland), Singapore (Singapore), and Bangkok (Thailand).
https://en.wikipedia.org/wiki/MDPI

4. *Frontiers Media SA* is a publisher of 185 peer reviewed, open access journals. Founded in 2007 it is based in Lausanne, Switzerland, with other offices in London, Madrid, Seattle and Brussels.
https://en.wikipedia.org/wiki/Frontiers_Media

5. *Hindawi* is a publisher of over 250 peer reviewed, open access, scientific, technical, and medical (STM) literature. It was founded in 1997 in Cairo, Egypt, but purchased in 2021 by *Wiley*, a publishing company based in the United States.
https://en.wikipedia.org/wiki/Hindawi_(publisher)

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