



OPINION ARTICLE

REVISED Fairness in scientific publishing [version 2; peer review: 3 approved]

Previously titled: FAIRness in scientific publishing

Philippa C. Matthews ¹⁻³

¹Department of Infectious Diseases and Microbiology, Oxford University Hospitals NHS Foundation Trust, John Radcliffe Hospital, Oxford, UK

²Harris Manchester College, Oxford, UK

³Nuffield Department of Medicine, University of Oxford, Oxford, UK

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Abstract

Major changes are afoot in the world of academic publishing, exemplified by innovations in publishing platforms, new approaches to metrics, improvements in our approach to peer review, and a focus on developing and encouraging open access to scientific literature and data.

The FAIR acronym recommends that authors and publishers should aim to make their output Findable, Accessible, Interoperable and Reusable. In this opinion article, I explore the parallel view that we should take a collective stance on making the dissemination of scientific data *fair* in the conventional sense, by being mindful of equity and justice for patients, clinicians, academics, publishers, funders and academic institutions.

The views I represent are founded on oral and written dialogue with clinicians, academics and the publishing industry. Further progress is needed to improve collaboration and dialogue between these groups, to reduce misinterpretation of metrics, to minimise inequity that arises as a consequence of geographic setting, to improve economic sustainability, and to broaden the spectrum, scope, and diversity of scientific publication.

Keywords

Academic publishing, peer review, impact factor, metrics, data visualization, open access

Open Peer Review

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1. **Gustav Nilsson** , Karolinska Institute, Stockholm, Sweden
2. **Dragan Pavlović** , Dalhousie University, Halifax, Canada
3. **Oyewale Tomori**, University of Lagos, Akoka, Yaba Lagos, Nigeria

Any reports and responses or comments on the article can be found at the end of the article.



This article is included in the **Research on Research, Policy & Culture** gateway.



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Corresponding author: Philippa C. Matthews (philippa.matthews@ndm.ox.ac.uk)

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REVISED Amendments from Version 1

The updated version of this article results from changes made in response to comments received from two reviewers.

The key changes are summarised by the following points:

1. In addition to the existing links to the data in PPT files, there is a link and DOI to provide access to questionnaire metadata;
2. The overall length has been reduced compared to the original submission, and the section on 'future challenges' has been divided into subsections;
3. A summary table has been added, to highlight the ways in which the principles of publishing fairness are relevant and applicable to different stakeholders;
4. The discussion about predatory journals has been expanded, both to acknowledge the increasing magnitude of this problem; and to place additional emphasis on the crucial role of robust peer review;
5. A new section on authorship has been added, to introduce the principle of 'team science' as well as to raise the potential problem of inappropriate authorship and its influence on metrics.

See referee reports

Introduction

Substantial and positive changes are currently underway in academic publishing; we now have the important opportunity to explore the many potential benefits that can stem from new ways to disseminate scientific data¹. Despite the improvements that are emerging, managing a piece of work from conception to publication can be a long and complicated journey, and elements of the process may often feel 'unfair'.

Advocates of data dissemination encourage aspiration to the principles enshrined in the 'FAIR' acronym; work should be Findable, Accessible, Interoperable and Reusable². As well as endorsing these attributes, I here represent the view that we must also develop a collective responsibility to make data sharing *fair* in the conventional sense; the way we generate, represent, review, share and use data should be underpinned by justice.

Recent discussions around the dissemination of my own data led me to seek opinion from a cross-section of colleagues within academic medicine. To formalize this exercise, I used an online questionnaire and then followed this up with a parallel approach to seek feedback from the publishing industry. This piece is a representation of some of the key themes that arose as a result of the two-pronged questionnaire, presentations at publishing and data visualization meetings, and ongoing dialogue throughout. The opinion that I present here is my own, but is underpinned by this varied input, with the aims of prompting further discussion, building bridges between publishing and academia, and advancing constructive dialogue to inform future progress.

Questionnaire methods and results

Questionnaires were posted on-line at <https://www.surveymonkey.co.uk/>. The methods and entire datasets collected from the quantitative and qualitative input submitted by 102 academics and 37 representatives of the publishing industry, are available to view and download as PPT files from 3 and 4 respectively; the questionnaire metadata can also be accessed in full from the Oxford University Research Archive (<https://doi.org/10.5287/bodleian:J5aekGAMy>).

This does not aspire to be a formal scientific study: the feedback I have collated represents individual opinion and the resulting work is my own personal synthesis of this dialogue and experience.

Domains for discussion in academic publication

Timelines

Conventional publication timelines commonly amount to weeks or months consumed by submission, peer-review, editorial decisions, potential corrections and resubmission⁵. Over 70% of academic survey respondents, agreed with the statement 'I am frustrated by the length of time it takes to publish my work'³, and over 80% of publishers agreed that reducing the timelines involved in academic publication should be a 'crucial priority'⁴. Such delays can stifle scientific progress in a variety of ways. Over the long time courses of publication, data frequently decay such that they are out of date before they go to press^{6,7}. Delay also leads to academic paralysis: until their work is published, academics may refrain from presenting or discussing their data publicly, thereby limiting its impact, impeding developments and collaborations, and allowing flaws and discrepancies to go unchallenged. There is also personal paralysis, whereby delays limit the next phase of an existing body of work, reduce the likelihood of moving on to a new project, and impinge on recruiting a team, applying for academic jobs, or securing funding^{3,7}.

Reducing delays is an important aspiration but one that comes with practical caveats. One publisher says: 'Timeliness is important. So is quality control. The latter negatively impacts the former'⁴. In conventional models of publishing this may have been the case, but we should now strive to dismantle the view that long delays are an inevitable consequence of producing high quality output. Happily, this framework is shifting as a result of parallel improvements in allowing academics to post their own work online, and in new approaches to post-publication peer review, an approach that has been adopted as an inventive compromise to reduce delays and promote data sharing, without sacrificing a quality assurance framework (e.g. by the F1000 and Wellcome Open Research platforms at <https://f1000research.com>, <https://wellcomeopenresearch.org/>)^{1,8}. Reorganisation of the publication process has already contributed to reducing delays in other ways: authors now have the option of disseminating their work through pre-publication archives (e.g. BioRxiv, <http://biorxiv.org/>) or on data-sharing platforms (e.g. Figshare, <https://figshare.com/>).

Peer review

Peer review is intended to provide quality assurance, a principle that is of universal importance to all stakeholders. Asked to respond

to the statement 'peer review functions equitably and contributes to improving the quality of my work', 58% of academics agreed³. However, there is universal recognition of the potential pitfalls of such a process: a reviewer may not be impartial, may be less expert than the authors of the work for which they are providing critique, may not give the task the time that it deserves, and may – on occasion – just get it wrong⁹. There can also be concern, as stated by one academic, that 'creativity is stifled in this process'. On these grounds, peer review has continued to be accepted only as the 'least worst' model⁹.

However, many improvements to peer review are evolving, with support and enthusiasm from both academics and publishers^{3,4}. These include:

- Making peer reviews open access (e.g. F1000, <https://f1000research.com> and PeerJ, <https://peerj.com/>), or providing double-blind peer review⁹;
- Using structured formats or templates for critical review, and developing collaborative peer review so that a consensus opinion is provided by a team (e.g. Frontiers, <http://home.frontiersin.org/>);
- Promoting a model that seeks online feedback from the entire scientific community (now a component of many open access review systems, including those at <https://f1000research.com>);
- Asking reviewers to suggest additional experiments only when these are deemed essential to the work and can be conducted within an agreed time frame (e.g. eLife, <https://elifesciences.org/>);
- Ensuring that publishers and journals consistently apply a set of criteria to ensuring reviewers have appropriate expertise to critique an article (e.g. F1000, <https://f1000research.com>);
- Improving editorial oversight and influence to ensure the process is conducted fairly and to arbitrate in cases where there is conflict of opinion.

Recognition for the substantial contribution made by reviewers is important, and strides forward are afoot in providing formal acknowledgement of the body of work undertaken by reviewers. Reviews themselves are becoming independently accredited pieces of scientific work that are a recognised part of a formal academic portfolio (including visibility on ORCID, <http://orcid.org/>), can be ranked and rated, are published with a DOI to make them accessible and citable, and can lead to the award of CME points^{10,11}. Reviewers can now log this activity in a systematic way (e.g. using Publons, <https://home.publons.com/>).

Barriers to communication

Much of the communication between academia and publishers is uni-directional and undertaken via rigid online portals, potentially leading to frustrations on both sides. Less than a quarter of academic respondents agreed or strongly agreed that they would feel 'comfortable and confident contacting editors and publishers to discuss work before submitting for publication' and only one in three reported having experienced positive interactions of this kind³.

Interestingly, academics' views on this point also reflect a degree of uncertainty about whether discussion with editors and publishers is appropriate at all: they raise concerns that this amounts to 'coercion' or is in some way 'cheating' the system³.

Collective responses to how communication should be improved include the need for improving formal and public interdisciplinary discussion, as well as the more personal view from academics, who are keen for editors and publishers to provide a reliable and named point of contact. There is also a collective responsibility for both parties to commit to effective communication, recognizing the ways in which appropriate dialogue can improve the content or accessibility of scientific output, and encouraging routine and transparent dialogue between publisher and academic.

Metrics

The impact factor, the most widely quoted metric, has disproportionate influence over the behaviour of academics, despite never being designed as a measure of the quality of any given piece of work⁵. To quote one publisher, impact factor is 'embedded in researcher culture'⁴. However, there has been increasing recognition that the metrics of any individual piece of work should be of more importance than those of the journal in which it is published, and that we should move away from assessing ourselves, or each other, based on this criterion^{7,12}. It is also important to be mindful that citations can be relatively easy to amass for articles written on major topics, while equally rigorous work in a more niche discipline naturally attracts a smaller audience.

'The impact factor is broken' stated one academic medic³. Only 19% of publishers disagreed with this statement, and others added their own descriptions of the impact factor as 'misused and outdated', 'obsolete' and 'a horrible obsession for editors and authors'⁴. We should collectively be encouraged to assess output using a much broader approach, for which an increasing number of tools is becoming available, including online resources such as Google Analytics (<https://analytics.google.com/>) or Google Scholar (<https://scholar.google.com/>), Altmetric (<https://www.altmetric.com/>), author-specific metrics such as h-index, and – most importantly – the application of common sense to viewing and interpreting all metrics in the right context^{12–14}.

Authorship

In clinical medicine, powering studies sufficiently to answer relevant questions often requires the recruitment and analysis of huge multicentre cohorts; similarly in scientific studies there are increasing examples of 'team science'. Acknowledging each individual contributor can be challenging, but the crucial importance of this is highlighted in a report by the Academy of Medical Sciences¹⁵. A reciprocal problem can also arise, whereby individuals are listed as authors despite not having made substantial contributions to a project. Many journals now try to address this by asking for specific details of the contributions made by each individual to the final piece of work.

Open access

Open access publication offers a system that should be inherently fair in promoting free access to published resources.

However, a major challenge to equity here is an economic one¹⁶. In a traditional, non open access model, the fees required for access to a journal or individual manuscript are frequently prohibitive for individuals; access therefore depends on institutional subscriptions. In the open access model, in order to make the work freely accessible to their readers, the publisher passes the costs on to their authors. Both systems discriminate strongly against those in less affluent settings.

Unsurprisingly, open access publication can influence article metrics, as those articles that are freely available may be more frequently cited¹⁷. So authors from wealthy institutions can potentially feed their own personal metrics by publishing their work in open access fora. In reality, the situation is more complicated, as the open access citation advantage is inconsistent between studies¹⁸, many publishing houses waive fees for authors from under-resourced settings, and there are now increasing options for free data sharing.

Boundaries

An academic manuscript usually has to be assembled into a standardised package that meets strict formatting requirements; this may help individual publishers or journals with quality control, and with preservation of a unique identity through a 'house style'. However, academics often see the formatting process as a complicated and time-consuming array of obligations, demanded of them before the work has even been accepted for publication, and without any appreciable benefit to quality³. Among publishers, a more diverse body of opinion is reflected between those who are in favour of relaxing (or unifying) formatting requirements and those who do not feel any change is required⁴. Online publication should progressively be providing an escape route from these constraints – albeit not one that has been consistently deployed or accepted.

Another, broader, boundary is also in operation – that which governs so strictly the fundamental nature of a piece of work, that which inhibits (or even prohibits) publication of a work-in-progress, or an unproved hypothesis, or results that are negative, unexplained or in conflict with previous data. Only 9% of academics agreed with the statement 'the process of publication is flexible, supports innovation, and allows me to create', and none strongly agreed³.

This should be of significant concern as there is increasing recognition of the risks and costs associated with the suppression of negative results^{19,20}. Furthermore, when innovation underpins so much true scientific progress, why are such tight restraints imposed on the nature, style, content and substance of academic output? We should move towards a system that welcomes diversity: there is much for us all to gain from encouraging dissemination of a wider body of work. This might include new concepts, methods and strategies, diverse commentary and critique, approaches that have been tried and failed, negative results, unfinished projects, protocols and registries for clinical trials, and live datasets that evolve over time.

The traditional publication of an academic 'paper' makes it impossible to add incremental advances or updates, and the only way to correct inconsistencies that emerge post-publication is to submit and publish a formal erratum. This is a substantial missed opportunity for quality improvement. The version control option offered

by newer publishing platforms allows authors to update their work to maintain it in its optimum form, while still preserving records of the original submission. This is the approach I have been ultimately been able to pursue for my own data, via the Wellcome Open Research platform (<https://wellcomeopenresearch.org/>)²¹, making it possible for this data resource to be updated and refined over time.

Future challenges

The resource gap

A publishing process perceived as equitable by one individual or institution may not operate in the best interests of another; this is particularly epitomized by the resource gap between different settings. Real fairness means reallocation of resources, waivers for institutions unable to pay access or publishing fees, better sharing of skill sets, balanced review, and capacity building in resource-limited settings²².

Maintaining quality

Diminishing or diluting quality is a potential concern as we enter an era in which a greater number of authors release a more diverse pool of work without pre-publication review. However, it is likely that market forces will tend to operate to maintain quality, and that the overall benefits of increasing data availability substantially outweigh any detriment to quality²³. The 'author pays' model can encourage publishers to accept submissions that fail to achieve a quality benchmark, on the grounds of the financial revenue accrued by their journal on acceptance of a submission²⁴; this highlights the importance of vigilance in ensuring that appropriate and consistent peer review is undertaken.

Changing behaviour

New approaches to data sharing can be met with suspicion or opposition⁵. Many authors are (either overtly or subliminally) wedded to the idea of a journal based impact factor and to blind peer review. Some authors also express anxiety arising from the potential conflict between wanting to share their output yet needing to retain ownership of the work. Substantial power is still held by a small subset of traditional journals and editorial boards who are keen to maintain the *status quo*, exerting an influence that – at times – can be 'toxic'²⁵.

Predatory journals

Vigilance is required for so-called 'predatory' journals²⁶ that often send unsolicited emails trying to entice authors with offers including rapid and open access publication, but that quote flawed or misleading metrics, have an unskilled editorial board, fail to provide suitable peer review, and/or publish the work only on receipt of a substantial fee^{24,26,27}. An apparent explosion in the numbers of such enterprises is a threat to *bona fide* publishers, exploits authors and funders, and diminishes the quality of published science. All publishing stakeholders should seek to avoid interaction with these unscrupulous publishers and remove them from the academic record²⁴.

Economic cost of publishing

I have not set out to include detailed discussion of economic cost, but it is clear that financial investment is crucial to support

innovative approaches to publishing. Academia has to be willing to accept and underwrite these costs, and the publishing industry to develop a system that is lean and competitive, and that offers value for money.

Caveats to this work

The discussions represented here took place over a short time frame and are based on opinions collected from a small section of academia³ and from an even smaller slice of the publishing fraternity⁴. Taking the opportunity to share feedback from academic clinicians does not mean that I represent all academic clinicians, or that the views of other sectors of academia are congruent.

Conclusions

We are in an era in which the process of disseminating scientific work is evolving fast and undoubtedly for the better. Working towards improvements, and finding solutions to problems, is a dynamic process that evolves over time as a consequence of input and innovation from a wide number of sources, both within academia and publishing.

As well as promoting the FAIR principles, we should aspire to a process that is genuinely *fair* and underpinned by open and collaborative discussion at all stages of the process. There are wide-reaching benefits of fairness in publishing, which are pertinent to all the key stakeholders (summarized in [Table 1](#), below).

Table 1. How and why we should strive for fairness in academic publication on behalf of a variety of stakeholders.

Stakeholder	Aspirations and rationale for fairness in academic publishing
Authors	<ul style="list-style-type: none"> Reducing delays in publication to advance progress of individuals, teams, and the global scientific community; Relaxing stringent formatting requirements to make the process less restrictive, onerous and time-consuming; Optimizing peer review (e.g. open access reviewers, ensuring reviewers have appropriate expertise, minimising delay); Providing open access portals, allowing work to be disseminated, used and cited widely; Embracing diversity of output, including encouraging publication of negative results, experimental protocols, and unfinished datasets; Reducing barriers to researchers in resource-limited settings; Optimizing communication with publishers to make the process collaborative and efficient, and to drive ongoing improvements.
Publishers	<ul style="list-style-type: none"> Representing publishers as an essential component of the process of data dissemination, and recognizing their role as a major driver for innovation; Enhancing dialogue around cost; making data dissemination cost-effective while maintaining the viability of publishing businesses; Developing a wider repertoire of output in order to meet the requirements of academia; Optimizing communication with academia to make the process collaborative and efficient, and to drive ongoing improvements; Identifying 'predatory' journals as harmful, and removing these from the academic record.
Funders and academic institutions	<ul style="list-style-type: none"> Providing full and timely recognition of scientific output hosted or funded by specific agencies; Developing opportunities for repositories of work produced by their researchers; Providing feedback to stakeholders and investors; Enhancing potential for collaboration; Driving opportunities for innovation and translational output.
Reviewers	<ul style="list-style-type: none"> Ensuring that reviewers have sufficient and appropriate expertise; Providing formal credit and recognition of the contribution of reviewers.
Patients	<ul style="list-style-type: none"> Acknowledging and rewarding the commitment and altruism of patients who enroll in clinical research; Making results and conclusions of scientific research available to patients, their health-care teams, and those who allocate resources; Avoiding harm through suppression of negative results.
Public	<ul style="list-style-type: none"> Assuring accountability of public money; Engaging and educating the public about science; Adding to the resources available to educational institutions; Making data available to other relevant agencies (e.g. the government, the media, economists, biotechnology).

Our end goals should be the timely output of robust and high quality science, that is appropriately scrutinized by equitable peer review, and that can be shared, reproduced and collectively applied for the advancement of understanding.

Competing interests

PCM was an invited speaker at the Association of Learned and Professional Society Publishers (ALPSP) annual conference in September 2016.

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The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

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Open Peer Review

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Dragan Pavlović 

Department of Anesthesia, Pain Management & Perioperative Medicine, Dalhousie University, Halifax, NS, Canada

I fully approve this corrected version of the manuscript.

Indeed, not all important issues could ever be treated in a single article. I therefore want to point out here that stigmatizing the so called "predatory journals" is quite unfortunate part of the competition for the scientific journal markets and a result of the counter attack of the big journals that are losing markets. Before some fair rating of the scientific journals would be invented, the only reliable criterion must remain the scientific quality of each particular article itself and the arbitrary and a priori discrimination of some open access journals or "predatory journals" abandoned. If the authors would agree, I would suggest that they express their opinion on this issue in their article.

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 17 January 2017

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Gustav Nilsson 

Department of Clinical Neuroscience, Karolinska Institute, Stockholm, Sweden

In the last review, my main concern was that survey data should be published openly in a repository. This has been done. I note in passing that additional value could be added by publishing a data frame of individual participant responses, rather than response distributions for each question, as it would then be possible to independently analyse data for the purposes of validation or exploration.

The text has been improved in this revised version. The addition of Table 1 to summarise key concerns is particularly helpful.

I am happy to approve this submission.

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 1

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Oyewale Tomori

Nigerian Academy of Science, Academy House 8A Ransome Kuti Road, University of Lagos, Akoka, Yaba Lagos, Nigeria

The title for this article is appropriate.

The abstract adequately summarises the article. In addition, the article goes beyond the FAIR acronym (Findable, Accessible, Interoperable and Reusable), for authors and publishers and addresses FAIRNESS on equity and justice for patients, clinicians, academics, publishers, funders and academic institutions. This is an opinion and not an "opinionated" paper. It is backed by a succinct and balanced analysis of responses to distributed questionnaire and discussions with stakeholders in publishing, authors and editors.

The conclusions are balanced and justified on the basis of the results.

I have also made some additional comments to the manuscript. To see this, please click [here](#).

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 06 January 2017

<https://doi.org/10.5256/f1000research.11114.r19008>

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Dragan Pavlović 

Department of Anesthesia, Pain Management & Perioperative Medicine, Dalhousie University, Halifax, NS, Canada

General description.

This is a well written “opinion” article where the author examined the parallel view that “we should take a collective stance on making the dissemination of scientific data *fair* in the conventional sense, by being mindful of equity and justice for patients, clinicians, academics, publishers, funders and academic institutions.” The views are based on oral and written dialogue (including 2 online questionnaires, 102 academics and 37 representatives of the publishing industry,) with clinicians, academics and the publishing industry. Parts of the work were presented earlier at 2 meetings. It is concluded that further progress is needed to improve collaboration and dialogue between these groups, to reduce misinterpretation of metrics, to reduce inequity that arises as a consequence of geographic setting, to improve economic sustainability, and to broaden the spectrum, scope, and diversity of scientific publication.

- Major comments.

This is in some way a relatively “short” text, mostly presented as a letter or a superficial comment, yet as such it appears to be quite long. There is no precise analysis of the announced results of the 2 online questionnaires, with 102 academics and 37 representatives of the publishing industry. The text remains to be just, as indeed announced, an opinion.

It looks to me that the text could be much shorter and much more focused on the acute problems, like expertise of the peer reviewers, negligence of the editors and the editorial boards of the journals, co-authorship and commercialization of the open access journals (‘predatory’ journals). Probably also the last paragraphs (Future challenges and Conclusions) could be substantially shortened. Or, if the questionnaires were appropriate, it would be possible to develop much more relevant and informed study. It is hard to see what how the study would look like since the questionnaires are not available.

The explosion of the number of the journals worldwide in the last decade or so was not discussed and there is no mention of the problem with the printed journals that are facing their slow disappearance.

The discussion does not reach deep enough to provide more concrete solutions to the problems that are presented in the paper.

- Minor comments

Peer review

Insisting on the expertise of the reviewers is justified, although the existing methods - some are mentioned in the text, do not guarantee it. It should be mentioned that the journals should have some more secure methods to choose the relevant experts for the peer review. May be the reviewers should supply some evidence what kind of the expertise they have in the relation to the paper that they give an opinion and the journals should be obliged to respect it.

Metrics

Problem of co-authorship and possible unjustified benefits for the co-authors was not mentioned.

Open access

Problem of commercialization (of the 'predatory' journals) could be more elaborated.

Formatting requirements

Probably some negative comments are not fully justified. I personally find impossible to review an article that, even if well written, is badly formatted. Badly presented text, even if it is of high quality, inevitably loses its impact. Please revise if you agree that your judgment was not carefully measured.

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 07 December 2016

<https://doi.org/10.5256/f1000research.11114.r18242>

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Gustav Nilsonne 

Department of Clinical Neuroscience, Karolinska Institute, Stockholm, Sweden

This paper is an opinion article, which discusses several areas where unresolved questions exist in the transition to more open scientific publication practices. The discussion is underpinned by survey data, although a full description of the survey and its results are not within the scope of the paper.

Areas covered in this paper are publication delays in scientific publishing, peer review,

communication between scientists and publishers, metrics such as the impact factor, models for open access publication, journals' formatting requirement, and boundaries imposed by traditional publishing on paper, which need not persist in a time with online publishing, but still do.

The paper provides a timely discussion, based on survey data, and on relevant and valid arguments. The abstract promises to explore the notion of fairness from the points of view of many different stakeholders. This point of departure lacks clear justification. In particular, it is not obvious why changes in scientific publishing should need to be perceived as fair by publishers. Also, not all of the stakeholder perspectives are explicitly addressed in the main text.

The survey data are available in two linked slide presentations. I recommend that the data be made available as a data frame in a non-proprietary file format. This will facilitate re-use and further exploration of the data set. Best practice is to use a repository that provides access to data in a format that is time-stamped, immutable, and permanent, and with a persistent identifier and an open licence. Documentation including metadata that describes how the survey was performed can be provided with the data or in this paper.

In the current movement towards more open publication practices, it is important to find out how scientists and other stakeholders perceive barriers and possibilities. This paper makes a valuable contribution in gathering scientists' views and arguments surrounding publication practices. I am happy to approve it with a reservation about the format of openly published survey data.

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response () 22 Dec 2016

Philippa Matthews, Nuffield Department of Medicine, Oxford, UK

Thank you Dr Nilsonne for the positive feedback and helpful critique.

I have uploaded the metadata to Oxford University Research Archive; this record can be accessed using the following link: <https://doi.org/10.5287/bodleian:J5aekGAMy>.

I will address the other suggestions in more detail in a revised version of the article.

Competing Interests: No competing interests were disclosed.

Comments on this article

Version 1

Author Response () 09 Jan 2017

Philippa Matthews, Nuffield Department of Medicine, Oxford, UK

Reviewer comments are reproduced below, with specific author responses in italics.

Reviewer 1: Gustav Nilsson, Department of Clinical Neuroscience, Karolinska Institute, Stockholm, Sweden

Recommendation: Approved with Reservations

This paper is an opinion article, which discusses several areas where unresolved questions exist in the transition to more open scientific publication practices. The discussion is underpinned by survey data, although a full description of the survey and its results are not within the scope of the paper. Areas covered in this paper are publication delays in scientific publishing, peer review, communication between scientists and publishers, metrics such as the impact factor, models for open access publication, journals' formatting requirement, and boundaries imposed by traditional publishing on paper, which need not persist in a time with online publishing, but still do. The paper provides a timely discussion, based on survey data, and on relevant and valid arguments.

The abstract promises to explore the notion of fairness from the points of view of many different stakeholders. This point of departure lacks clear justification. In particular, it is not obvious why changes in scientific publishing should need to be perceived as fair by publishers. Also, not all of the stakeholder perspectives are explicitly addressed in the main text.

> In order to address this, while at the same time being mindful about the concerns over the length of the article expressed by Reviewer 2, I have added a summary table to the conclusions of the article. This lists each of the stakeholders in the process and lists the key points regarding how fairness is pertinent to this group, and what steps are needed to work towards greater fairness.

The survey data are available in two linked slide presentations. I recommend that the data be made available as a data frame in a non-proprietary file format. This will facilitate re-use and further exploration of the data set. Best practice is to use a repository that provides access to data in a format that is time-stamped, immutable, and permanent, and with a persistent identifier and an open licence. Documentation including metadata that describes how the survey was performed can be provided with the data or in this paper.

> I have uploaded the metadata to Oxford University Research Archive; this record can be accessed using the following link: <https://doi.org/10.5287/bodleian:j5aekGAMy>.

In the current movement towards more open publication practices, it is important to find out how scientists and other stakeholders perceive barriers and possibilities. This paper makes a valuable contribution in gathering scientists' views and arguments surrounding publication practices. I am happy to approve it with a reservation about the format of openly published survey data.

> Thank you for the helpful and positive feedback.

Reviewer 2: Dragan Pavlović, Department of Anesthesia, Pain Management & Perioperative Medicine, Dalhousie University, Halifax, NS, Canada

Recommendation: Approved with Reservations

General description:

This is a well written “opinion” article where the author examined the parallel view that “we should take a collective stance on making the dissemination of scientific data *fair* in the conventional sense, by being mindful of equity and justice for patients, clinicians, academics, publishers, funders and academic institutions.” The views are based on oral and written dialogue (including 2 online questionnaires, 102 academics and 37 representatives of the publishing industry,) with clinicians, academics and the publishing industry. Parts of the work were presented earlier at 2 meetings. It is concluded that further progress is needed to improve collaboration and dialogue between these groups, to reduce misinterpretation of metrics, to reduce inequity that arises as a consequence of geographic setting, to improve economic sustainability, and to broaden the spectrum, scope, and diversity of scientific publication.

Major comments:

This is in some way a relatively “short” text, mostly presented as a letter or a superficial comment, yet as such it appears to be quite long. There is no precise analysis of the announced results of the 2 online questionnaires, with 102 academics and 37 representatives of the publishing industry. The text remains to be just, as indeed announced, an opinion. It looks to me that the text could be much shorter and much more focused on the acute problems, like expertise of the peer reviewers, negligence of the editors and the editorial boards of the journals, co-authorship and commercialization of the open access journals (‘predatory’ journals). Probably also the last paragraphs (Future challenges and Conclusions) could be substantially shortened. Or, if the questionnaires were appropriate, it would be possible to develop much more relevant and informed study. It is hard to see what how the study would look like since the questionnaires are not available.

>Thank you for this feedback. In line with these comments, I have made the following revisions:

- (i) I have substantially shortened the article (cutting it by approx. 25% compared to the original text);*
- (ii) I have sub-divided the ‘future challenges’ section with subheadings for additional clarity;*
- (iii) A summary table provides clarity for the conclusions section without adding extra words to the main text of the manuscript;*
- (iv) As per my response to reviewer 1, in addition to the full metadata within existing references to F1000 slides, I have also uploaded this into a formal research repository, where it can now be accessed (<https://doi.org/10.5287/bodleian:J5aekGAMy>).*

Although it is an attractive idea to present questionnaire data as a ‘study’ (and I did consider this approach), the questionnaires were designed to capture a body of opinion, and did not set out to be a robust study. A full ‘analysis’ can be found within the linked powerpoint slides (references 3 and 4), and the resource is also improved upon by the new URL for the complete metadata (as above).

The explosion of the number of the journals worldwide in the last decade or so was not discussed and there is no mention of the problem with the printed journals that are facing their slow disappearance.

> The significance of the increase in journal numbers to this particular topic is mainly as a result of the increase in numbers of predatory journals. I have expanded upon this point as follows: ‘An apparent explosion in the numbers of such enterprises is a threat to bona fide publishers, exploits authors and funders, diminishes the quality of published science. All publishing stakeholders should seek to avoid interaction with these unscrupulous publishers and remove them from the academic record’. I have

added new references to support this additional point (refs 25 and 27). The issue around economic viability for printed journals is now included in the summary table as well as in the final paragraph of the 'future challenges' section.

The discussion does not reach deep enough to provide more concrete solutions to the problems that are presented in the paper.

*> Finding solutions is not a 'concrete' process to be defined by a single author – it is a dynamic process that evolves over time as a consequence of input and innovation from a wide number of sources, both within academia and publishing (this point now added as the second sentence within the conclusions section). However, the article does emphasise areas where I strongly endorse a particular outcome or change, e.g. 'we should now strive to dismantle the view that long delays are an inevitable consequence of producing high quality output'; 'Collective responses to how communication should be improved include...'.
In the absence of any absolute solutions, the article is instead intended to highlight the way that current developments are indeed offering incremental improvements; each section outlines a problem or hurdle, followed by a solution or potential solution(s); for example:*

(i) Section headed 'timelines' outlines the reasons for delays, the adverse consequences of delays, and concludes with the emerging solution that 'this framework is shifting as a result of parallel improvements in allowing academics to post their own work online, and in new approaches to post-publication peer review';

(ii) Section headed 'peer review' represents the anxieties that surround this process before moving on to a number of solutions and improvements presented as a list of bullet points.

(iii) Section headed 'barriers to communication' outlines some of the difficulties before concluding that we should be 'encouraging routine and transparent dialogue between publisher and academic.'

Minor comments

Peer review

Insisting on the expertise of the reviewers is justified, although the existing methods - some are mentioned in the text, do not guarantee it. It should be mentioned that the journals should have some more secure methods to choose the relevant experts for the peer review. May be the reviewers should supply some evidence what kind of the expertise they have in the relation to the paper that they give an opinion and the journals should be obliged to respect it.

> Thank you, I have added this to the list of bullet points in the peer review section, to the section on predatory journals, and to the new summary table.

Metrics

Problem of co-authorship and possible unjustified benefits for the co-authors was not mentioned.

> Authorship is indeed a valid question to raise, and I have therefore added this as an additional short section. As well as the point raised here about the potential for unjustified benefits, I have also taken the opportunity to add comment about team authorship, and to add a relevant reference ('Improving recognition of team science contributions in biomedical research careers';

<https://www.acmedsci.ac.uk/viewFile/56defebabba91.pdf>: Academy of Medical Sciences; 2016.)

Open access

Problem of commercialization (of the 'predatory' journals) could be more elaborated.

> As per my response to the previous comment regarding elaboration of predatory journals, I have

expanded upon this section and added two new references.

Formatting requirements

Probably some negative comments are not fully justified. I personally find impossible to review an article that, even if well written, is badly formatted. Badly presented text, even if it is of high quality, inevitably loses its impact. Please revise if you agree that your judgment was not carefully measured.

> I have made every effort to address concerns around formatting and clarity by shortening the manuscript, condensing the sections about 'formatting requirements' and 'boundaries', adding subheadings to the 'future challenges' section, including a summary table, and making the conclusion more punchy and concise.

My opinion is based on every effort to be 'carefully measured'; it is this concern that prompted me to seek a wide body of opinion through questionnaires. This does not necessarily make my views representative of the entire community, and this is highlighted explicitly within the article, e.g. 'taking the opportunity to share feedback from academic clinicians does not mean that I represent all academic clinicians, or that the views of other sectors of academia are congruent'.

Competing Interests: No competing interests were disclosed.

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