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Ethical Aspects of Open Access:
A Windy Road

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WORKSHOP REPORT

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Foreword

Ever since the Berlin Declaration in 2003 marked a milestone in the proliferation of open access publishing, the topic has attracted large interest among the scientific community and beyond. The idea to provide results of research funded by taxpayer money free of charge to the general public is as simple as it is enticing. Yet, in the past 15 years, a variety of different models and forms of access have created a vast, and at times confusing, system leading to uncertainty among the research community about this, at its heart, very laudable development.

The advent of open access coincides with increasing pressures on the academic community to publish or perish, whereby researchers feel the need to publish as many research articles in as many impactful journals as possible in order to further their careers. Predatory journals have taken advantage of these existential pressures and prey on researchers to circumvent established practices of good research conduct.

However, open access is here to stay, as the European Commission's plans to publish all of the research funded within its research framework programmes in open access by 2020 clearly show.

It is therefore high time to think about improving open access publishing, to develop stronger mechanism against fraud, and to enable researchers to freely share the fruits of their labour with their peers and the general public.

This report on ethical aspects of open access summarises the outcomes of a workshop which was attempting to do exactly that. Throughout the various presentations, given by a variety of stakeholders, solutions from different angles are provided. We are deeply grateful to our hosts, the Royal Flemish Academy of Belgium for Science and the Arts, for welcoming us in Brussels, to all of our speakers, who have made invaluable contributions to the topic, to the audience for their lively and interesting participation, and to the members of the ALLEA Permanent Working Group on Science & Ethics on whose initiative this workshop came to be.

We do hope that this report can serve the reader as a comprehensive overview on the state of the ethical debate on open access and the various actors involved in the process to achieve that European research will in the future be as accessible as possible.

Professor Göran Hermerén
Chair of ALLEA Permanent Working Group on Science & Ethics
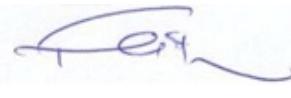
Professor László Fésüs
Lead workshop organiser; member of ALLEA Permanent Working Group on Science & Ethics

Keynote - Ethical Aspects of Open Access Publishing

László Fésüs, Hungarian Academy of Sciences

The rise of open access publishing in the past 15 years or so has been a laudable development in general, though lack of clear guidelines and absent harmonisation procedures on how to publish correctly in open access and with whom have provided a breeding ground for unacceptable and unethical publishing practices.

This presentation will reflect on the trends and developments in open access publishing; the ethical concerns and issues derived from open access publishing; and the reaction of the scientific community to these challenges.

Trends and Developments in Open Access Publishing

Open access cannot be looked at in isolation. Rather it is a development that went hand in hand with the digitisation of academic research and, more recently, the involvement of Big Data. Increasingly this enables researchers to collaborate more easily across national boundaries and academic disciplines. At the same time, scientific output is shifting away from the Western World, as evidenced by the fact that there are now more scientific papers published in China than in the United States (US National Science Foundation, 2018). Involving more people in the scientific endeavour, spread across more disciplines and countries, undoubtedly is beneficial to the quality of research. Yet, an ever-growing system with little to no regulation may either lead to confusion among researchers or to questionable business practices, both of which we can find in the open access world.

open access publishing has become a global industry based on the gold access publishing model, with the Directory of Open Access Journals (DOAJ) estimating that there are currently around 10.000 OA journals in existence.

Nevertheless, the growth of open access publishing has not exactly proceeded as anticipated or predicted. According to a 2017 analysis, only around 15% of journals publish all accepted articles as open access (Else, 2018) - financed by charging per-article fees to authors – and just less than half have adopted a 'hybrid' model of publishing, whereby they make papers immediately free to read for a fee.

In 2011, it was predicted (in a presentation made by Peter Binfield, of PLoS to the Society of Scholarly Publishing meeting in 2011) that 50% of STM (Science, Technology, Medicine) publications would be published by around 100 megajournals in open access by now. However, the actual number is closer to a mere 3% of STM publications. Open access publishing has created an explosion of titles, most of which seem to be competing for a small slice of a fixed pie (Davis, 2018). This competition has only stiffened further with the arrival of big publishing houses in open access. Arguably, open access had its roots in a reaction against the very monopoly of those big publishers, yet by their sheer market force and competitive advantage, they have managed to assert themselves in the

field of open access publishing. "The small number of elite journals with far more submissions than they can possibly handle in their toll-access flagship can use this cascading model to reassert themselves in the marketplace" (Esposito, 2015).

It has to be emphasised that rigorous quality control, information, dissemination, innovative technologies in publishing and archiving are not free, somebody has to bear the costs. The more selective the editorial process is, the more costly it becomes to publish high quality journals. "In the absence of external support, an open access journal has to be either selective and expensive, or inexpensive but less selective. Highly selective journals running in the open access mode struggle to break even, whereas large-volume, low-selectivity open access publishing generates substantial profit" (Leptin, 2012).

Research funding organisations across Europe have in many cases mandated or at least announced a preference for open access publishing for research projects financed by them. However, this preference raises the question of which form of open access is referred to and, if the answer is the gold access model, whether diverting funds from the actual research in order to pay for article processing charges (APC) - levied by journals to allow immediate open access - is the right way to go.

Research institutions and universities now face the dilemma that, if all of their research groups' publications were to be published in the gold access model, the costs for APCs would far exceed their annual budgets for journal subscriptions.

Two trends and expectations in response to this dilemma can be observed:

1. Research-intensive institutions would pay the lion's share and this would subsidise free access for less research-intensive institutions and the pharmaceutical industry. This may lead to questionable dominance of scientific publishing by richer institutions.

2. The 'green' model of OA publishing emerged, requiring authors to deposit their manuscript or its accepted version in a public repository within a predetermined period of time.

The article is generally made available free of charge after an embargo period which may vary depending on the research funders: mostly either 6 months to 1 year in the natural sciences and between 1 to 2 years in the social sciences and humanities.

Uncertainty about open access publishing models makes compliance cumbersome for researchers. Open access mandates (gold or green, different repository requirements, reporting) set by institutions, funders and governments differ in various countries.

The European Council Conclusion 9526/16 agreed to support the transition to immediate open access as default by 2020 without embargoes (or with as short as possible embargoes), without financial and legal barriers, taking into account the diversity within the scientific community. Though, the transition process seems to be lasting a lot longer than expected, and it is not likely to be concluded before there is a uniform agreement on which form of open access publishing should be adopted across Europe. The recent announcement of several European research funders, called Plan S, to mandate scientists they fund to publish only in full open access journals from 2020 might accelerate this process.

Ethical Issues and Concerns

As seen above, the advent of open access has been a confusing, de-centralised enterprise with an absence of regulations and guidelines, leading to a number of ethical issues faced by those active in the scientific endeavor.

Ethical issues include, but are not limited to:

1. Possibility of restriction in academic freedom

2. Emergence of APC figure as a measure of quality

3. Mushrooming of bogus ('predatory') journals

4. Increased use of bogus journals

5. Hybrid journals – 'double dipping'

Researchers may find themselves in a situation where they are restricted to publish their work in channels they consider less appropriate. This could happen either via administrative open access mandates requiring publication with a certain model of open access, or via the limited availability of funds for APCs.

Depending on the size of earmarked APC funds in their institution or country, researchers may not have equal opportunity compared to some of their peers to freely publish their results as they see fit for the advancement of their research careers.

These elements may endanger the freedom of science and the principle of equal opportunity, and further widen the already existing gap in research output between countries, including Member States of the European Union.

In certain areas, we run the danger of linking the value of scientific results to the amount of APCs charged for open access publication. APCs cannot and should not be regarded as a quality measure for scientific work, as it creates false and artificial criteria for the assessment of scientific excellence.

The emergence of bogus or predatory journals is a regrettable development to take advantage of the lack of clear guidelines in open access publishing, and it is yet another symptom of the pressure many researchers face concerning the 'publish-or-perish' mentality often applied to career advancement. According to research done by Shen & Björk in 2015, 8,000 predatory journals published around 400,000 articles.

Predatory journals often name nonexistent people as their editors and editorial board members and claim ownership of articles that they have plagiarised from other publications. Sloppy or no archiving of articles is commonplace. Typically, these publishers spam professional email lists, broadly soliciting article submissions for the clear purpose of gaining additional income.

Read more about poor editorial standards in this sting operation conducted by John Bohannon and published in Science (2013, 342) -> *Who's Afraid of Peer Review?*

http://science.sciencemag.org/content/342/6154/60

Read more about the recruitment of fake editors in this study by Piotr Sorokowski, Emanuel Kulczycki, Agnieszka Sorokowska, and Katarzyna Pisanski published in NATURE (2017, 543) -> *Predatory journals recruit fake editors.*

https://www.nature.com/news/predatory-journals-recruit-fake-editor-1.21662

Researchers may find themselves more compelled to publish in a predatory journal to seemingly more easily disseminate their work, yet they do so at the cost of solid editorial standards such as comprehensive peer-review. Others may be duped by predatory journals or follow poor guidance by colleagues.

Increasing number of researchers are tempted to pay and then expect lower standards by publishing their findings in bogus open access journals which lack quality control in order to increase their personal career. This has resulted in misuse of funds for self-promotion, increasing number of inaccurate

or even fabricated results in the scientific literature, and misleading scientific claims. Many researchers are just deceived by predatory journals or are simply unaware of the difference between bogus and quality open access journals. Even those who recognise a potential problem can fall victim. Predatory journals are becoming increasingly adept at appearing legitimate (Moher et al, 2017).

Problems associated with open access publishing also touch upon business ethics. A large proportion of the traditional subscription journals became hybrid journals, publishing an increasing number

> The above problems pose both a financial as well as an ethical problem, as was described in the study by David Moher et al. published in NATURE (549, 2017) -> *Stop this waste of people and money*
>
> https://www.nature.com/news/stop-this-waste-of-people-animals-and-money-1.22554

of open, freely accessible papers online for which publishers collect APCs, in addition to the subscription payments - for the same journals - received from libraries and licensing consortia. This is often called 'double dipping'. Unless publishers introduce a transparent system which decreases subscription payment in proportion to collected APCs, they will be blamed for exploitation of the publishing system to gain extra profit.

The repercussions of such unethical business practices and poor publication standards come to the detriment of the entire scientific community. Rattled by scandals and irreproducible research, it is unsurprising that the public would begin to lose trust in scientific output, resulting in a rejection of

science and ultimately in a reduction of research funding.

Reaction by the Scientific Community

It should be made very clear that some of the issues open access faces with regards to unethical behaviour must not reflect on its commendable merit of enabling easier and less restrictive access to scientific publications as a whole.

The responsibility lies with all stakeholders in open access publishing to ensure that the core principles of scientific publishing are abided by. These are the critical, high quality and independent evaluation of scientific claims and the secure archiving of validated research.

The academic community must therefore arrive at a common understanding of open access which simultaneously provides equal opportunities for researchers regardless of their location or discipline, and which does not violate or threaten academic freedom.

Furthermore, in the absence of a centralised governing body, it is up to the community to monitor the publishing scene and communicate with each other where to publish and which journals to avoid.

Members of the scientific community should be encouraged to participate in such monitoring activities, to report misconducts and to support activities which regularly list, based on well-defined criteria, credible and bogus ('predatory') publishers and journals.

Recommendations by Moher et al (2017):

» Publishers, research institutions and funders should issue explicit warnings against illegitimate publishers.

» Funders and research institutions should prohibit the use of funds to support predatory journal publications; make sure that researchers

are trained in how to select appropriate journals when submitting their work; audit where grantees, faculty members and research staff publish.

» When seeking promotion or funding, researchers should include a declaration that their CV is free of predatory publications.

» Before approving a study, ethics committees should ask researchers to declare in writing their willingness to work with their institutional resources, such as librarians, to ensure they do not submit to any journals without reviewing evidence-based criteria for avoiding these journals.

To identify predatory journals it is advisable to follow the 13 characteristics to identify predatory journals as laid out by Shamseer et al (2017, see box). Additionally, it may be worthwhile checking Cabell's Index, a website currently listing around 4,000 journals on a blacklist of predatory journals; 65 criteria are used to determine whether a journal is predatory and a white list is also available. The Directory of Open Access Journals (www.doaj.org) also provides useful information about credibility of OA journals.

Salient evidence-based characteristics of potential predatory journals as described by Shamseer et al (2017)

1. The scope of interest includes non-biomedical subjects alongside biomedical topics.

2. The website contains spelling and grammar errors.

3. Images are distorted/fuzzy, intended to look like something they are not, or which are unauthorised.

4. The homepage language targets authors.

5. The Index *Copernicus Value* is promoted on the website.

6. Description of the manuscript handling process is lacking.

7. Manuscripts are requested to be submitted via email.

8. Rapid publication is promised.

9. There is no retraction policy.

10. Information on whether and how journal content will be digitally preserved is absent.

11. The Article processing/publication charge is very low (e.g., < $150 USD).

12. Journals claiming to be Open Access either retain copyright of published research or fail to mention copyright.

13. The contact email address is non-professional and non-journal affiliated (e.g. @yahoo.com).

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https://www.allea.org/wp-content/uploads/2018/02/LFesusOpen_Access-The-Problem-Landscape-from-an-Ethical-Perspective.pdf

Editorial Responsibility In The Open Access World

Chris Graf, Committee on Publication Ethics/Wiley

The guiding question of this presentation is concerned with the responsibilities of editorial staff in the open access world. After all, as we move from a traditional subscription access world to an open access world, editorial responsibility is still all about quality.

In order to achieve this quality assurance, COPE suggests 10 core practices which journal editors and journal publishers should - or even must - adhere to. In addition to these core practices, there are a number of further actions which could be taken to tackle some of the challenges today's research and publishing ecosystem presents to editorial staff. Adhering to transparent and clearly defined standards helps journals to both create a better understanding within the research community regarding the reasons why these practices are needed, while simultaneously increasing the quality and accessibility of the scientific output.

These core practices are supplemented by a wealth of resources that elaborate in-depth on many of these processes, all of which are available on the COPE website. As the research endeavour varies slightly from institution to institution, and even more so between countries, it is of paramount importance to consider the core practices alongside existing national and international codes of conduct for research.

Yet if COPE stopped at just the provision of these core practices that would not suffice in a research publishing industry that has seen dramatic changes over the past few years. One such example of an unintended consequence has been the increasing prevalence of fake reviewers, accompanied by increasing recognition that the peer-review process could be improved. For entrepreneurs who understand the intense pressure researchers face to publish a large body of work in as short a time as

Core practices are the policies and practices journals and publishers need, to reach the highest standards in publication ethics. We include cases with advice, guidance for day-to-day practice, education modules and events on topical issues, to support journals and publishers fulfil their policies.

View all core practices

1. Allegations of misconduct	2. Authorship and contributorship	3. Complaints and appeals
4. Conflicts of interest / Competing interests	5. Data and reproducibility	6. Ethical oversight
7. Intellectual property	8. Journal management	9. Peer review processes
10. Post-publication discussions and corrections		

https://publicationethics.org/core-practices
https://publicationethics.org/files/editable-bean/COPE_Core_Practices_0.pdf

COPE's Core Practices (https://publicationethics.org/files/editable-bean/COPE_Core_Practices_0.pdf)

possible, the incentive to create services that tempt researchers wittingly or unwittingly to engage with fake reviewers in exchange for money becomes more intense and alluring.

Most researchers do not seek to publish their work in dubious journals, yet the pressure to publish in order to advance their academic careers, coupled with a notable absence of mechanisms to identify reliable and unreliable peer-reviewed publishers, can easily lead to less-than-desirable publishing outcomes. To assist the researchers as well as the editors, COPE provides an overview of potential red flags which, if occurring concurrently, should lead to a more thorough investigation of the reviewer's credentials. The list can be accessed here: https://publicationethics.org/files/COPE%20PR_Manipulation_Process.pdf

Open access has come up with a variety of different publishing models, which are added to the already existing models in established publishing houses. However, regardless of their subscription model, high publishing standards and requirements regarding the scientific merit of an academic publication must remain the same.

To date, COPE has avoided mentioning predatory journals or black lists; rather, COPE's focus is on what good practice looks like so as to encourage clean editorial work. One major way of doing that is to refer researchers to resources which can help them make good decisions regarding where to publish their research, such as 'think.check.submit' (https://thinkchecksubmit.org/), which guides researchers through the process of assessing the appropriate publishing outlet to submit their research paper. While reputable journals and publishers will usually have solid practices in place to ensure the quality of their published research, it may at times be the case that those standards slip or that they are simply no longer fit for their purpose. As such, COPE includes a sanction process where its members fail to meet

the 10 core practices and need to demonstrate better practice.

Beyond Editorial Responsibilities

Together with DOAJ (https://doaj.org/), OASPA (https://oaspa.org/) and WAME (http://www.wame.org/), COPE has developed a document which highlights the 16 principles of transparency and best practice in research publishing[1]. These principles are used to vet membership applications. Some of those principles apply to business practices, such as:

1. **Website**: A journal's website, including the text that it contains, shall demonstrate that care has been taken to ensure high ethical and professional standards. It must not contain information that might mislead readers or authors, including any attempt to mimic another journal/publisher's site.

An 'Aims & Scope' statement should be included on the website and the readership should be clearly defined. There should be a statement on what a journal will consider for publication including authorship criteria (e.g., not considering multiple submissions, redundant publications) to be included. ISSNs should be clearly displayed (separate for print and electronic).

2. **Name of journal**: The Journal name shall be unique and not be one that is easily confused with another journal or that might mislead potential authors and readers about the Journal's origin or association with other Journals.

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1 Taken from COPE/DOAJ/OASPA/WAME (2018), Principles of Transparency and Best Practice in Research Publishing, version 3. Emphasis speaker. https://publicationethics.org/resources/guidelines-new/principles-transparency-and-best-practice-scholarly-publishing

3. **Ownership and management**: Information about the ownership and/or management of a journal shall be clearly indicated on the journal's website. Publishers shall not use organizational or journal names that would mislead potential authors and editors about the nature of the journal's owner.

4. **Governing body**: Journals shall have editorial boards or other governing bodies whose members are recognized experts in the subject areas included within the journal's scope. The full names and affiliations of the journal's editorial board or other governing body shall be provided on the journal's website.

5. **Author fees**: Any fees or charges that are required for manuscript processing and/or publishing materials in the journal shall be clearly stated in a place that is easy for potential authors to find prior to submitting their manuscripts for review or explained to authors before they begin preparing their manuscript for submission. If no such fees are charged that should also be clearly stated.

6. **Revenue sources**: Business models or revenue sources (e.g., author fees, subscriptions, advertising, reprints, institutional support, and organizational support) shall be clearly stated or otherwise evident on the journal's website. Publishing fees or waiver status should not influence editorial decision making.

7. **Direct marketing:** Any direct marketing activities, including solicitation of manuscripts that are conducted on behalf of the journal, shall be appropriate, well targeted, and unobtrusive. Information provided about the publisher or journal is expected to be truthful and not misleading for readers or authors.

Many bad practices relate to pretending to be something that you are not; how a journal is governed, owned and managed, and who is involved; fees must be transparent and upfront and a description how the journal makes money must be provided.

The World is Changing, What Are We Doing About It?

One of the problems, and subsequent criticisms, many research publications run into is their lack of reproducibility, a feature so common that it is generally referred to as the reproducibility crisis. Rather than focusing on the immense difficulty of reproducing an experiment 1-to-1, we ought to instead rethink how we approach the research methods.

One way to do that would be an expansion, or rather re-application, of the peer review process at an early stage of the research process. Researchers could first have their methods validated; these would then be transparently registered, and this would allow for peer review of the research methods before the results of the research are known, a model called Registered Reports (https://www.bps.org.uk/news-and-policy/we-are-working-wiley-improve-replicability-and-transparency-research). Registered Reports would enable researchers to present their research design and get feedback on how to improve their research design. If researchers adhere to these suggestions, journals would more readily agree to publish their research once it has been conducted. It is an 'in principle' acceptance before the research is carried out, but at the same time ensures good research practice while reducing the temptation to oversell the outcomes of any given research project.

Methods are only one part on the quest to improve research; another aspect is data. Data is particularly

susceptible to contain errors, which may range from simple typos to incorrect structures, all of which could result in useless research outcomes. By using data validation, such as this free Wiley service to validated ^{13}C NMR data (https://www.wsslabs.com), researchers can enter their data and have it validated based on previous data readings from different researchers who used the same technique. The programme will then provide a certificate which can be submitted to the publisher alongside the final research. It is worth noting, however, that data validation may only work in fields with comparable research procedures, such as chemistry or related fields in the natural sciences.

Consider What We Aspire To

Science is like an orchestra, in which many people contribute in different ways to a greater purpose. This means that the median impact factor of research publications is far below that of NATURE publications, which are the equivalent to achieving 'rock star' status in the science world. We need to be aware of this discrepancy and keep in mind that, for the vast majority of research, transparency is more important than excitement. This in turn means that transparency must be increased and that being transparent must be made as easy and as rewarding to researchers as possible.

A publication by Brian Nosek and colleagues on promoting an open research culture (Nosek et al, 2015) describes the TOP guidelines to aim for research transparency in eight standards and on three levels. The standard is widely endorsed in the research community, yet its implementation is lacking. The authors of this report recognise this project and, in collaboration with the Center for Open Science, devised a workshop on TOP part 2, resulting in the preprint here (https://doi.org/10.31219/osf.io/sm78t) which aims to make the recommendations from TOP part 1 implementable.

In the end, what we need to aspire to is embracing the idea that being a part of a 'research orchestra' is as rewarding as being a 'science rock star'.

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https://www.allea.org/wp-content/uploads/2018/02/CGraf_Editorial-Responsibility-in-the-Open-Access-World-Best-Practices.pdf

Open Data: Balancing Transparency with Resilience

Stephan Lewandowsky, University of Bristol

This presentation highlighted the vital importance of transparency and open data for the success of open access as a publishing model. It is crucial that the transformation and implementation of transparency and open data is driven by the scientific community. This is presuming that if scientists fail to come up with suitable ways to make their data accessible while at the same time protecting it from undue use, other institutions with less-than-noble goals might do it for them. Such institutions could include private businesses, but might also come in the form of government agencies regulating open access.

Transparency and open data are essential and, at least on the surface, its harmful potential may not always be immediately obvious to the untrained eye. Though, when we talk about these two terms, we need to consider their full implications, which go far beyond just making data available. Whether we like it or not, transparency and open data are political or, with the right spin imposed on it, can be politicised.

This presentation therefore lays out several situations where transparency and open data may be employed to abuse, misrepresent, or mislead individuals or even society at large.

In particular the focus will be on:

1: Intentions of people requesting data

2: Questions surrounding consent and ethics

3: The competence of people who request data

4: Cherry-picking of research results to suit an agenda

In order to contextualise the above 4 issue areas, it is crucial to understand what makes transparency and open data political, who has vested interests, and how politicisation of scientific research is used to create uncertainty in the greater population in order to further someone's agenda.

Publicly funded scientists, especially if they are held to the high standards as laid out in the chapter on editorial responsibility, will have undergone lengthy procedures before, during, and after their research to ensure that their datasets are not only sound, but also in accordance with the FAIR (Findable, Accessible, Interoperable, Reusable) principles.

This means that their data should be made available for scrutiny by external channels, regardless of their ability to pass a scientific judgement on this data. Privately funded research, by contrast, is generally exempted from such disclosures.

This may lead to cases as described in Cataldo, Bero & Malone (2010), in which the tobacco industry used raw access data and re-analysed it with different parameters to make the dangers of tobacco-related morbidity and mortality disappear.

On the other side of the spectrum, scientists may find themselves accused of withholding data, despite ample evidence to the contrary. (Compare: Gianelli 1998).

Both of these scenarios, reinterpreting data and casting doubt over the integrity of the researcher, serve the same purpose: to create uncertainty over the validity of the research produced. This uncertainty is generally not one that affects the

scientific community, which has sufficient means in and of itself to navigate such a conflict, but rather it is aimed at the general public. The assumption is that as long as the general public believes there is a disagreement among scientists about certain issues (climate change, tobacco, vaccinations), no decisive legislation can be taken in favour of one position or the other. In matters concerning public health, this does not only jeopardise the reputation of the researcher whose data was misused, but often times it comes as a direct detriment to the population who is misled.

In the turn towards open access, scientists therefore need to be keenly aware of the implications that making their data open and transparent may have when used nefariously. Levy & Merritt Johns (2016) put it even more strongly when they speak about the weaponisation of transparency in science and governance.

1. Intentions of People Requesting Data

Depending on whom you ask the question of whether the intentions of the people/institutions requesting the data matter or not, you might get a variety of responses. While open data advocates, as well as industry representatives requesting data from publicly funded research for their own research, would argue that intentions should not matter, many researchers in public health would disagree.

The issue at hand is whether people or institutions who request access to data should disclose any conflicts of interest that may arise from using that data, since data can be, and has been, used selectively to suit a certain narrative. As mentioned above, the scientific community will usually not be fooled by these cases for longer periods of time; the existing checks and balances will eventually override any harm done by the misrepresentation

of data. However, the question of intention becomes more complex when it pertains to the use of data to shape public opinion and, perhaps more importantly, public policy.

If data is interpreted in a way that omits certain aspects of the dataset or outright dismisses them, then doubt is cast on the validity of the entire research. As such, the appearance of a scientific debate is created on a topic in which there is actually widespread scientific consensus. Climate change is a clear example of a topic where an insignificant minority of scientists oppose the commonly accepted position of anthropogenic climate change. The public is now confronted with two diametrically opposed positions, neither of which they may fully understand due to their complexity. All they know is that one is vastly more inconvenient than the other. What we end up with is a situation of public indecisiveness, which lasts as long as this faux scientific debate remains unresolved. Before a resolution is found, no meaningful public policy response will be formulated. In the case of tobacco, control legislation was delayed significantly as a result of an apparent scientific 'debate' (Proctor, 2011).

2. Questions Surrounding Consent and Ethics

Any research conducted in which human beings are the research subjects relies on their explicit consent to partake in the research. Researchers need to ensure the confidentiality of their research subjects' data and need to make sure that they are not individually identifiable. However, for a variety of reasons, full anonymity often proves difficult to achieve, leaving a backdoor open for potential abuse via 'creative' interpretation of results. There is a need to carefully think about the implications of consent. Consentees may not realise entirely what their consent may entail if their data has to

be made openly available and is therefore possibly subject to abuse. For the research community, this poses some difficult questions: how to ensure that research subjects are aware of knock-on effects of their consent for one particular study? If they do understand the possible knock-on effects, would they give their consent to this study, or to any other study in the future?

Open data is, by its very nature, susceptible to abuse. There is a real danger that consent given for one particular study is misused in further studies by other researchers or political operatives, without specifically re-requesting consent for further use.

3. The Competence of People Who Request Data

While scientists operate in an institutional context governed by different committees and boards that ensure thorough quality assurance of their research projects, open data means that someone without a scientific background can re-analyse scientifically sound data and arrive at different or wrong conclusions. This would not, in and of itself, represent the biggest of problems. However, enabled by modern communication technologies, it has become ever more simple to reach a global audience via podcasts, social media and the like, which are easily accessible online. In a way, communication technology can equally amplify the voices of the scientists and the voices of the laymen playing scientists. Sometimes the non-scientists may even drown out the scientists with more 'catchy' or fear-mongering results. For the general public, it may at times be difficult to differentiate the validity of findings published in journal articles versus other less scrutinised means of dissemination. In this, the role of the media must not be understated, as their only vested interest is selling papers, which is best

done by creating controversy. Smith et al. (2007) investigated this phenomenon by looking at UK MMR vaccination rates and its relation to sustained negative, but false, coverage of the effects of MMR vaccinations on children.

4. Cherry-picking of Research Results to Suit an Agenda

In line with the responsibilities laid out in chapter 2, researchers are now expected to conform to high-quality standards in the conduct of their research. They ought to pre-register their hypotheses and their analysis, against which the data will be evaluated to ensure that they did not cherry-pick results or outcome measures. Yet, the same is not done for those who request data. As a general rule, if you look at enough data for long enough, you will be able to find a data set that suits your agenda. Previous points above highlight that sometimes only very little spin is required to obfuscate the original meaning of a data set.

Requiring an analysis plan as a condition to access data is both in accordance with the *Accessible* component of the FAIR principle, which allows for moderation of access, and it would allow to better protect sensitive data by providing a measure to guard against improper usage.

Conclusion

There is no doubt that science needs to be open and transparent. However, there is an important distinction to be made between a scientific debate and the public debate. Conflating the two, intentionally or unintentionally, can lead to uncertainty and indecisiveness in the public perception, with, at its worst, harmful outcomes for the population.

We need to recognise that openness and transparency facilitate science, but they also aid in the dissemination of noise, nonsense, commercial interests, and political propaganda. The scientific community needs to be acutely aware of this and cannot cast it aside.

A solution is to create a balance between the researchers and their data on the one hand, and the users requesting the data on the other. This would provide a symmetrical structure, wherein the people requesting the data must show that they are competent enough to appropriately use them. This must go hand in hand with institutionalised mechanisms of accountability, such as independent national arbitration boards that decide on data availability or, in contested cases, can provide independent re-analyses.

Pre-registration of intended uses by the requesting party would be another step towards better use of open data.

At all times, the consent of the research subjects needs to be observed and the consentee needs to be aware of the full implications of their consent.

To protect against undue accusations of withholding data, the peer review process should include a determination of whether all data has been made available and used appropriately.

Transparency and open data are at the core of good research practice, though the above challenges remain and require innovative solutions from within the scientific community.

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Questionable and Unethical Publishers: How to Spot Them and Enable Researchers to Avoid Being Trapped

Lars Bjørnshauge, Directory of Open Access Journals

Since the advent of the Budapest Convention on open access 15 years ago, two concurrent publishing models in open access have emerged, the green model and the gold model. While distinctly different in the kind of access they provide to the end user, both are considered open access formats, leading to widespread confusion among the research community. Gold open access is providing immediate access to the final published version in fully open access journals, be it with or without article publishing charges (APC), most articles are published with APCs, but the majority of open access Journals are operated without APCs. Green open access provides access to earlier versions of the papers archived in open access repositories, often after an embargo period defined by the publisher.

This presentation will examine the issue of questionable publishing, which is not restricted to open access publishing, yet its ongoing confusion on terminology provides a fertile environment for publishers to engage in questionable behaviour. This chapter will therefore look at what constitutes questionable publishing, what drives it, and how to detect questionable journals.

What Constitutes Questionable Publishing

Over the past years, we have witnessed a growing understanding within the research community, but also among policy-makers, that the accessibility of research results is conducive to the creation of better scholarship. Yet we are still lacking the incentives to effectively distribute and provide access to the knowledge created through research. Decision makers and research funders still accept that research results are not readily available in open access immediately after publication. In recent years, however, an increasing number of research funders have moved to recommend and even require that the research they are funding is published in open access, but they still leave it up to the researcher to choose where and how (open/not open) to publish it. What is needed, thus, is a re-thinking within the funding community to better get to grips with how the research they are funding is actually accessible for the research community on a global scale and specify the requirements in terms of compliant publishing channels. This means that a paper should be available immediately out in the open, including the underlying data as well as any software that was used to obtain this data. Publishing needs to be perceived, in a way, as the responsibility of the academic community, much like academic freedom is considered paramount for good research design.

Bohannon (2013) in his study *Who's Afraid of Peer Review?* somewhat infamously published results showing that multiple open access journals fell for a sting to publish fake research, leading to questions around their approach to peer-review. However,

recalling the main idea of this chapter that questionable publishing is not restricted to open access publishing, only one year later, Van Noorden (2014) broke the news that legacy publishers had to withdraw more than 120 papers which were proven to have been computer-generated. Questionable publishing is therefore not exclusive to open access publishing, but the business model of open access, where it is relatively easy to set up a journal and solicit articles, has certainly made it easier to engage in questionable practices. Regardless of the shape these questionable practices may take, they are the ones that are considered, as coined by Beall, 'predatory journals'.

Yet, the term predatory may itself not be entirely applicable, or at least not only to the journals that are commonly chastised with the term. If we assume that predation in the publishing industry is based on the interest to make a profit, then exploiting the divide between libraries (that typically pay for subscriptions) and scholars (who typically expect and demand access to those subscriptions) in order to make extraordinarily high profits could be considered predatory conduct. In the same way, continuing to raise prices at several times the rate of inflation, even as those increases cause direct injury to libraries by robbing them of budget flexibility or even make it impossible for them to continue providing resources, is very much driven by an interest to make a bigger profit. However, both of these practices are commonplace, even for publishing houses which are not generally considered predatorial. Though, blame should not fall on the publishing industry. Instead, academia should re-assess their thinking to outsource the dissemination of their intellectual production without service level agreements to a third-party, the publishers.

As such, the term 'predatory publishers' should not be used, as its terminology is unclear. In the same way as the terms 'illegitimate publishers', 'deceptive

publishers', and 'unethical publishers' all touch on certain aspects that are wrong within open access publishing, but none can be globally applicable. Thus, the term 'questionable publishers' provides a more accurate and realistic description.

> **Directory of Open Access Journals (DOAJ) definition of questionable publishers:**
>
> Questionable publishers are publishers who are not living up to reasonable standards in terms of content, services, transparency and business behaviour.

Indubitably, questionable publishers are a problem. The question remains, however, just how big of a problem they really are. Shen & Björk (2015) estimated that at the time of their investigation, around 8.000 questionable journals containing about 420,000 papers existed. A similar study conducted by Crawford (2017) came to the conclusion that many of those journals are actually empty. He came to the conclusion that there are 3275 (active) journals, with about 121,000 articles published in them.

In their analysis, Shen & Björk noticed that questionable publishers originate and are spread throughout the world, with India being the single largest country of origin at 27.1%. The same holds true for the authors, with India being home to about 34.7% of all authors publishing in questionable formats.

What Drives Questionable Publishing

In the assessment of questionable publishing practices, five main drivers can be identified:

1. Ignorance

2. Aggressive marketing

3. Publish-or-perish

4. Research Assessment

5. Exclusion

Ignorance

At times, researchers show a stunning lack of attention to the fate of their paper. It appears as if all available energy was used up in the production of the research, only to then ignore entirely what happens with their papers afterwards. This may derive from ignorance around peer-review, archiving, indexing, and the like. In principle, this means that a solid research product may be published on a platform whose quality standard is far below the quality standard used in the production of the research.

Aggressive Marketing

Researchers often find themselves aggressively targeted by scientific journals' marketing campaigns urging them to publish their research in their journal. Ease of access to publishing, thus, becomes an alluring prospect in a career-driven world. Especially, when considering the third point in this list.

Publish-or-Perish

In order to advance their academic careers, researchers are now keenly aware of the need to include as many publications as possible on their CV, regardless of their individual merit. Unfortunately, in too many cases, this behaviour still pays off with better career prospects, while there are few, if any, repercussions to be feared when publishing in those journals. Particularly researchers in the Global South may be tempted to pay money to have their research published if it ends up enabling them to get a better CV.

Research Assessment

While some blame lies with the researchers, it is perhaps more important to note that those in charge of assessing the merits of a scientific publication often fail to comply with their obligation to thoroughly ensure that the journal in which the research was published actually is of sufficient quality itself. Research assessment cannot be done only by looking at the number of publications of a researcher, or an impact factor of a journal, but must focus on the actual research.

Exclusion

In line with the finding of Shen & Björk, there seems to be a certain bias by dominant indexing platforms, such as Scopus or Web of Science, against research that was not produced in the Global North. In response, researchers from the Global South often feel the need to find a workaround to get published.

First and foremost, those managing or funding research need to re-think how they evaluate the research they govern. Research assessment can only be based on the actual content of the research, and not on any other metric, such as impact factor or number of publications.

Institutions that issue mandates to publish the research they fund in open access should develop mechanisms to guide researchers to assess the various publishing channels. One way to do that could be by creating and disseminating lists of accredited publishing channels, which is what more and more governmental institutions and authorities do.

Another aspect, closely related to the concept of research integrity, is publishing literacy. Knowing how and where to publish, and how to share must be an integral part of researcher's training.

How to Spot Questionable Publishers/ Journals

In its most basic form, the 5 minute check as outlined by Gavia (2012) can serve as a comprehensive starting point to identify the black sheep in the publishing community.

The DOAJ does not seek to primarily exclude those with questionable publishing practices. Rather, it aims to promote open access journals that behave in line with the Principles of Transparency in Scholarly Publishing (https://doaj.org/bestpractice), which the DOAJ co-developed with the Committee on Publication Ethics (COPE), the open access Scholarly Publishers Association (OASPA), and the World Association of Medical Editors (WAME.), to assist journals to become attractive publishing channels.

When a journal applies for listing in the DOAJ, the journal needs to both adhere to these principles as well as be able to respond to no less than 54 questions concerning the policies and working mechanisms of the journal before they can be included in the DOAJ. These questions ensure that the journal is in line with quality assurance guidelines accepted in the community and include questions about the editorial board, the peer review process, archiving/ preservation, plagiarism, openness, licensing and copyright, re-use rights, and charges.

In this process, it may well be that a publisher does not satisfy every single criteria at the moment of application. However, the DOAJ is keen to support these publishers to improve their internal structures. A single appearance of a shady practice does not in and of itself warrant exclusion from the DOAJ. Rather this prompts communication with

The 5 Minute check to assess the credibility of a journal -> Gavia Library

» Competent web-site?

» Mass e-mails asking for editors and submissions?

» In the DOAJ? – if not: worrying

» Usage statistics?

» Staple in the discipline?

» Misspelled journal titles?

» Journal launch dates – many at the same time?

» Empty shells- no/few articles?

the journal to help and advice in improving the journals' practices. It is the accumulation of several bad practices which arouses suspicion and will lead to rejection.

However, there are also a number of bad practices which should raise red flags among those dealing with journals. If a journal displays inappropriate marketing practices such as email spamming; if it has a title that includes 'International', 'American', or 'European'; if it is very broad in scope; if it displays fake impact factors; if it advertises quick publishing; if it has a low publication fee; if it has little to no quality control of articles; and if it has a low or no standard for peer-review, suspicions over the integrity of the journal are justified.

Blacklists

Blacklists are incomplete by definition and susceptible to legal challenges as well as personal bias. This stigmatises publishers rather than help them get better (Neylon, 2017).

Whitelists

Whitelists (lists of accredited journals) may be a better tool in that regard. They show that a journal abides by certain standards. These standards can be used as a basis for research evaluation, rewards system, promotion and resource allocation. In other words, if you do not publish in an accredited publisher, you may not get support for APCs. The aim must be to steer researchers towards using whitelisted journals rather than avoiding blacklisted journals.

The 16 principles of transparency in scholarly publishing as described by COPE, OASPA, WAME, and the DOAJ

1. Peer review process

2. Governing Body

3. Editorial team/contact

4. Author fees

5. Copyright

6. Identification of and dealing with allegations of research misconduct

7. Ownership and management

8. Website

9. Name of journal

10. Conflicts of interest

11. Access

12. Revenue sources

13. Advertising

14. Publishing schedule

15. Archiving

16. Direct marketing

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Research Assessment In Open Science

Michele Garfinkel, European Molecular Biology Organization

This presentation is concerned with how a shift towards open science would fundamentally impact research assessment and, subsequently, the prospects of career academicians. At the very heart of scientific publishing, as defined by the National Research Council of the National Academies (2004) of the United States, lies the intention to move science forward. The act of publishing is a quid pro quo in which authors receive credit and acknowledgement in exchange for disclosure of their scientific findings. This method of disseminating scientific findings has been proven and tested for decades and constitutes the foundation of the modern scientific publishing industry.

The caveat, as this presentation points out, is that publishing in a renowned journal and achieving a high impact factor, i.e. number of citations, has arguably become in and of itself the most important metric to assess the quality of scientists. The result has been an academic industry in which scientists at all career levels, though particularly young scientists, feel the pressure to publish a large volume of publications as quickly as possible, a development known as 'publish-or-perish'.

In the transition towards open science and particularly open access, this publish or perish culture has at times led to questionable publishing practices. Scientists may feel the need to publish their research in journals with high visibility and impact or in journals without due respect for appropriate quality assurance and peer-review, the latter of which is undermining the trustworthiness

of their own research as well as that of the scientific community as a whole.

This presentation thus intends to highlight what the purpose of publicising scientific information should be, as well as to point out methods which would enable it to better achieve its intended goals, namely to improve the overall quality of published scientific output.

Regardless of which shape the scientific publication comes in (be it open access, the traditional subscription-based model, and even preprints) there are certain core principles that need to be met in order to meet the quality standards of scientific publications.

The 11 core principles that EMBO bases its scientific publishing on have strongly influenced the 'Declaration on Research Assessment – DORA', which was adopted in 2012 and has since become a global initiative covering all scientific disciplines as well as key stakeholders in the scientific landscape. The single most pertinent recommendation from this declaration vis-à-vis research assessment is "the need to eliminate the use of journal-based metrics, such as Journal Impact Factors, in funding, appointment, and promotion considerations." The declaration makes it very clear that "Journal Impact Factors should not be used as a surrogate measure of the quality of individual research articles to assess an individual scientist's contributions, or in hiring, promoting, or funding decisions." The reality, however, shows that Journal Impact Factors have become exactly that: a convenient means to

EMBO 11 core principles

1. Transparent review

2. Scooping Protection

3. Referee Cross-Commenting

4. Single Round

5. Fast Process

6. Source Data

7. Approachable Editors

8. Informed Evaluation

9. Manuscript Transfers

10. Flexible Formatting

11. Pre-publication screening

judge the perceived merit of a scientific publication, for both researchers and assessors. This is not to say that metrics-based assessments are not useful per se, though it still needs to be figured out how to meaningfully integrate them in the research assessment process. The problem that arises for the assessors is that the alternative - a thorough review - is expensive and time-consuming and therefore, given the volume of publication, often too cumbersome or even outright impossible.

This leads to the question: if impact factor and other metrics-based assessments should be discarded as a means to judge researchers (and it seems that increasing open access publishing may make them somewhat redundant anyway), what are better ways to assess research in the future?

One approach which has gained some traction has been the use of preprint servers such as ArXiv/ BioRxiv, where scientists can upload their final, though still pre-peer-review, articles online to invite comments. Reservations towards the use of preprint servers come mostly from researchers who may be afraid to make their research known before their name can be officially attached to it because of fears that they could be scooped. This is a legitimate concern, and any system focussing on preprint servers must take scooping protection into consideration. At EMBO, this means that if you

submit a preprint, or a regular article submission for that matter, and someone else publishes a similar research afterwards, the original article shall still be printed, provided it satisfies all other quality standards.

Preprints may be the future of research. Researchers, as the authors of their papers, should have control over their publications. As it stands currently, peer-review on preprints is not at all times a formalised process yet, though there is some indication that the community is moving towards formalising it. Nevertheless, there is little doubt that preprints encourage openness and, it is expected, honest behaviour. As such, it may be integral to the improvement of research integrity.

One aspect that still needs to be addressed is the sustainability of preprint servers. This question revolves around ownership of the respective servers and how to ensure that articles remain accessible even after the owner no longer exists. This is a question primarily of funding and of maintaining those servers, which in the end does create some costs.

Providing the opportunity to publish a research article preprint is very much shaped and driven by the suppliers of research infrastructures. However, their provision is a moot point without better training for research practitioners. Despite

intensifying efforts on the European level, many practitioners still lack the basic skills to conduct research properly, including vital aspects such as data management plans, use of controls and the like. The onus to communicate and provide these trainings to research practitioners - particularly those at the beginning of their careers - is on the institutes, but also on the supervising positions.

A further aspect obfuscating the assessment of research is the high number of authors many collaborative research projects contain. There is little doubt that modern research, especially in the natural sciences, would not be possible without large teams, often in collaborative efforts between research institutes. Yet a list of authors does not indicate to which extent an individual researcher has contributed to a given paper. For example, senior professors may use this system to bolster their bibliographies and their impact factor, by appearing on research papers without a significant contribution, while technicians and data managers may receive no credit for their work on a particular research problem. A potential solution would be a simple rebranding away from the term 'authorship' and in favour of the term 'contributorship'. It is of paramount importance in the assessment of research and researchers to know precisely who did what and who was responsible for any given research project. As such, existing platforms like CASRAI (www.casrai.org) supplemented by the use of ORCID (www.orcid.org) identifiers could help in establishing a system in which it is possible to assess not only the quality of someone's research but also to assess the quality of their individual contribution to that research.

Conclusion

The transition towards open science offers the opportunity to do away with some long-standing mechanisms of research assessment, such as the use of Journal Impact Factors. More open and honest means of scientific publishing, coupled with a reform of the academic research assessment system, would allow researchers to publish their research open access without jeopardising their career prospects. Researchers need to be able to put their unpublished research on preprint servers for scrutiny without the fear of having their research scooped by someone else. Preprints may be the future of scientific publishing, provided that questions of sustainability are solved and that the researchers themselves receive adequate guidance in their use. Furthermore, the system of authorship needs to be reformed to better depict the individual researchers' contributions.

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Dealing with the Challenges of Openness – Stakeholder Perspectives

Lidia Borrell-Damian, European University Association
Maud Evrard, Science Europe
Göran Hermerén, Royal Swedish Academy of Letters, History and Antiquities
Martin Stokhof, European Research Council
Marcel Swart, Young Academy of Europe
Stuart Taylor, Royal Society
Moderation: Maura Hiney, Royal Irish Academy

Reflecting on the presentations made earlier that day, this diverse panel, consisting of representatives from science funders, performers, young researchers, and the academies, was asked to respond to two questions: "What is the positive impact of open access in your sector?" and "if there are specific actions in your sector that are already or will be undertaken to mitigate some of the challenges mentioned throughout the workshop". Afterwards, the discussion was widened to include all participants of the workshop. For reasons of conciseness, the following text compiles the relevant responses under the separate headings of the original two questions.

What is the Positive Impact of Open Access in Your Sector?

The panel was unanimous that, by and large, open access has/will have overwhelmingly positive impacts on their respective sectors. The panel acknowledged that open access still has challenges and shortcomings but stressed that there needs to be a shift towards open access as part of a wider reform of academic publishing and research assessment, including an adaptation of the peer-review system to ensure the quality of publications in an open access world.

Regarding the positive impacts of open access, it was pointed out that any assessment of open access needs to recognise that, as it stands, only about a quarter of research articles published worldwide are immediately available to read. In a majority of cases the outputs of research, often publically funded, are hidden behind paywalls or, at the very least, access is restricted by embargo periods. This means that the current model of academic publishing erects significant monetary barriers to anyone trying to access cutting edge knowledge. To researchers in well-endowed research systems this might be merely a nuisance, but to researchers coming from low income research systems, this effectively prevents them from utilising the most up to date knowledge in their fields.

Therefore, the panel agreed that enabling more researchers to access more research outputs more readily will undoubtedly increase the speed of scientific progress worldwide. In this sense, open access contributes greatly to facilitating borderless research across geographic and disciplinary boundaries. It was also noted that open access articles have higher download rates and reach a greater readership. In practical terms this means that in times of crisis (such as during the Zika virus

outbreak) open access can hasten the dissemination of knowledge and ultimately help to find a solution more quickly. As such, it is generally expected that open access will also lead to an increase in scientific output. However, in order to enable researchers to take full advantage of open access, a research-friendly copyright reform is needed. A particularly crucial tool in this regard is text and data mining, which would allow researchers to trawl and exploit more information than they otherwise could by conventional means.

The accessibility of open access not only has the benefit of a faster dissemination of scientific knowledge, but can increase transparency in research. Increased readership goes hand in hand with increased scrutiny and a quicker correction of the research record in cases of inaccuracies in content or interpretation. In an open access system, it is easier for researchers to make their research visible, which is an incentive to ensure that their research methods and conduct are beyond reproach. As such, it is assumed that increased transparency would enhance overall trust in research, a particularly welcome and pertinent development given the ongoing debates around fake science, which have been introduced in previous presentations.

For early career academics, open access is one of the most important recent developments in research. This group is particularly affected by the publish-or-perish culture, resulting in the need to publish as many papers as quickly as possible to further their careers. Young researchers are simultaneously excited about the prospects of easier pathways to getting published and increasing visibility, but they are also apprehensive about the implications of open access on research assessment. Young researchers in particular feel the pressure to publish in high impact journals, which are assumed to indicate high quality through excellent peer review. However, because of the way in which the journal

impact factor is calculated (citations over time), some of the newer open access journals have yet to achieve high impact factors.

With open access, there is an opportunity for comprehensive reform of the peer-review system as we know it, but this must go hand in hand with quality. Moving away from high-impact, journal-centric publishing, to, for example, open peer review, not only challenges the current system, but the way in which research is currently evaluated. With ever larger volumes of publications, assessing a researcher based on citation rates of papers and the impact factor of the journals in which they publish has long been a favoured proxy of quality in higher education and, so far, viable alternatives are few and far between. That said, open access opens the way for other quality measures but much work remains to be done in this area of second generation metrics.

In conclusion, the community feels that open access will go a long way to improving openness of research as well as its transparency for peers and the public. However, it was also clear that successful implementation of open access needs concurrent reforms in the peer-review and research assessment systems.

Are there specific actions in your sector which have already been, or will soon be, undertaken to mitigate some of the challenges mentioned this morning?

In addressing this question, the panel highlighted a variety of different actions that need to be taken in order to make open access successful. However, it was agreed that sectors cannot advance the open access agenda in isolation. As such, the panel agreed that any action taken by one sector to further the open access agenda needs to be holistic and take account of its feasibility for other sectors. Ultimately, what is needed is a long-term change in

the culture around academic publishing and career progression. Despite its very obvious implications on a large section of academic life, open access does not yet enjoy the level of awareness within the community that would be required to effectively overhaul the system.

To further highlight the need for awareness raising, the panellists cited excerpts from the European University Association's annual survey on open access (https://eua.eu/downloads/publications/open%20access%202016-2017%20eua%20survey%20results.pdf), which further illustrate that many active researchers are just not aware of open access and its benefits. The simple conclusion that can be drawn from this is that, no matter how beneficial open access may be, as long as the researchers who are publishing do not know about it, the entire endeavour is more or less pointless. open access needs to be community-driven since funding agencies and the like depend on their community, not vice-versa.

As the panel agreed about the need for a long-term culture change, the steps needed in order to facilitate this development became the focus of the discussion. As a foremost priority, it was considered essential to train young researchers in academic publishing as soon as they enter the academic system. They need to be taught that the current publication system is outdated and become aware of the benefits of open access. However, for a successful uptake of open access, it is vital that they are not only shown the benefits of open access, but they also require assurances that publishing in an entirely new system will not have detrimental effects on their career progression. Some of the guidelines required to help researchers navigate this complex web of open access publication already exist. Institutions like the aforementioned Think.Check.Submit or the DOAJ clearly show how and where to publish open access.

In order to provide these reassurances, several different actors need to contribute their share. Universities and other research performing institutions will have to set up clear and harmonised guidelines on open access publishing within their institutions, which include guidance on data management, legal aspects, and storing and sharing of publications. These adaptations need to be supported by funding agencies which should encourage open access publishing wherever possible. Encouraging open access publishing, however, will only be successful if the publishing industry also embraces open access. This might be the most demanding step in the whole process, as it would turn a long-standing and universally accepted model of academic publishing on its head since trying to squeeze open access into the traditional publishing model runs the danger of trying to combine two mutually exclusive publishing models without any assurances that they go together.

Once the above conditions have all been met, the remaining issue - and not at all a trivial one - is how to reform the research assessment system. As it stands, research assessment is intimately linked to the prestige of high impact publication, often expressed as Journal Impact Factor. In order for open access to be widely applicable and desirable, research assessment and academic publishing need to be decoupled. This would require a rethinking of the rewards system for researchers, including providing recognition for good open access publishing practices. Additionally, a welcome side effect of a reformed publishing model would be a reduction in so-called 'salami slicing', a term used to describe the practice of publishing multiple articles out of essentially the same research in order to bolster bibliographies and impact factor. It was noted that other parts of the world such as North America appear to put less emphasis on impact factors and the like without detrimental effects to research quality.

In conclusion, there are a wide range of activities already underway that will contribute to mitigating some of the unresolved questions in open access. However, a concerted effort between all stakeholders is required to avoid duplication of work, seamless implementation and, most of all, an open access publishing system that works for all research disciplines and researchers from all backgrounds.

Workshop Programme

9:00	Welcome/Short introduction	Welcome: KVAB President Joos Vandewalle
		Welcome/Introduction: Chair of Permanent Working Group Science & Ethics, Göran Hermerén
9:15	Outcomes of ICSU Open Data in Science Workshop, summing up	Roger Pfister, Swiss Academies of Arts and Sciences
		Find the ICSU Workshop Report at: http://euro-isc.org/thematic_work/opendata/
9:25	Keynote – Ethical Aspects of Open Access Publishing	Laszló Fesüs, Hungarian Academy of Sciences
	Followed by Q&A	
09:55	Editorial Responsibility in the Open Access world	Chris Graf, Committee Of Publication Ethics - COPE/ Wiley
	Followed by Q&A	
10:25	Open Data: balancing transparency with resilience	Stephan Lewandowsky, University of Bristol
	Followed by Q&A	
11:25	Questionable and Unethical Publishers: How to spot them and enable researchers to avoid being trapped	Lars Bjørnshauge, Directory of Open Access Journals
	Followed by Q&A	
12:15	Research Assessment in Open Science	Michele Garfinkel, EMBO
	Followed by Q&A	
13:45	Dealing with the Challenges of Openness: Stakeholder Perspectives	Lidia Borrell-Damian, European University Association
		Maud Evrard, ScienceEurope
		Göran Hermerén, Royal Swedish Academy of Letters, History and Antiquities
		Martin Stokhof, European Research Council
		Marcel Swart, Young Academy of Europe
		Stuart Taylor, Royal Society
		Moderation: Maura Hiney, Royal Irish Academy

The ALLEA Permanent Working Group on Science & Ethics

The ALLEA Permanent Working Group on Science and Ethics (PWGSE) is concerned with a wide range of issues, both 'internal' (within the scientific community) and 'external' (relations between science and society). Since ethical considerations have been an essential component in the consolidation of a united Europe, and also in the creation of ALLEA, the PWGSE was established to bring together experts from academies across Europe and provide them with a platform for continuous debate on research ethics and research integrity.

The PWGSE has been extending its capacities and activities during recent years, in order to adequately fulfil its mission of collective deliberation on topics such as research integrity, ethics education in science and research training, ethics of scientific policy advice, trust in science, scientific misconduct, and plagiarism, among others.

Further issues recently addressed include dual use of research outcomes, ethical aspects of risks, science and human rights, support for higher education and research in Palestine, research on human embryos, synthetic biology, nanotechnologies etc. Additionally, the group provides expertise for the Horizon 2020 funded ENERI project (European Network of Research Ethics and Research Integrity), which aims to train experts in ethics related issues and to harmonise research integrity infrastructures across Europe.

The PWGSE meets regularly and has also convened thematic meetings in wider settings, typically in partnerships with other relevant organisations such as the European Commission, the European Science Foundation (ESF), the International Council for Science (ICSU), and UNESCO, among many others. The members of the PWGSE drew on its extensive network of experts and institutions for the successful execution of the revision process of "The European Code of Conduct for Research Integrity".

Members of the ALLEA Permanent Working Group on Science and Ethics

» Göran Hermerén (Chair) – Royal Swedish Academy of Letters, History and Antiquities

» Maura Hiney – Royal Irish Academy

» László Fésüs – Hungarian Academy of Sciences

» Roger Pfister – Swiss Academies of Arts and Sciences

» Els Van Damme – Royal Academies for Science and the Arts of Belgium

» Martin van Hees – Royal Netherlands Academy of Arts and Sciences

» Krista Varantola – Council of Finnish Academies

» Anna Benaki – Academy of Athens (Greece)

» Anne Fagot-Largeault – Académie des Sciences (France)

» Michael Quante – Union of the German Academies of Sciences and Humanities

» Bertil Emrah Oder – Bilim Akademisi (The Science Academy, Turkey)

» Pere Puigdomenech – Royal Academy of Sciences and Arts of Barcelona / Institute for Catalan Studies (Spain)

» Deborah Oughton – Norwegian Academy of Science and Letters

» Zbigniew Szawarski – Polish Academy of Sciences

» Raivo Uibo – Estonian Academy of Sciences

About ALLEA

ALLEA is the European Federation of Academies of Sciences and Humanities. It was founded in 1994 and brings together almost 60 Academies of Sciences and Learned Societies from over 40 countries in the Council of Europe region. ALLEA is financed by annual dues from its Member Academies and remains fully independent from political, religious, commercial or ideological interests.

Member Academies operate as learned societies, think tanks, or research performing organisations. They are self-governing communities of leaders of scholarly enquiry across all fields of the natural sciences, the social sciences and the humanities. ALLEA therefore provides access to an unparalleled human resource of intellectual excellence, experience and expertise. Furthermore, its integrative membership structure comprises Academies from both EU and non–EU member states in Europe.

ALLEA seeks to contribute to improving the framework conditions under which science and scholarship can excel. Jointly with its Member Academies, ALLEA is in a position to address the full range of structural and policy issues facing Europe in science, research and innovation. In doing so, it is guided by a common understanding of Europe, bound together by historical, social and political factors as well as for scientific and economic reasons.

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