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Introduction

CESAER considers Open Access (OA) to scientific publications to be one of the most important ongoing movements in the scientific community today. It has the potential to fulfill the most important ethos of science: to make scientific knowledge available free of charge to all users through business models that are considered fair and reasonable.

This is the first 'CESAER Open Access Task Force' product. The objective of this Task Force is to prepare and support CESAER members in achieving the vision and mission through Open Science. The mission has been clearly defined: to deliver science to society.

Open Science supports and contributes to Lifelong Learning, Education & Training, Innovation & Economic Growth, and Societal Engagement. Several links are included in this document for more (specific) information on Open Science and Open Access.

The Task Force group consisted of: Torbjørn Digernes (Norwegian University of Science and Technology), chair, Juan Carlos de Martin (Politecnico di Torino), Donatella Sciuto (Politecnico di Milano) and Wilma van Wezenbeek (Delft University of Technology, supported by Anke Versteeg and Just de Leeuwe).

1. Open Access Fundamentals

The basic idea of Open Access is to make literature available online in digital form, free of charge to the user, and free of unnecessary copyright and licensing restrictions. It is in accordance with academic values and academic freedom to share the results of publicly funded, peer reviewed research literature as much as possible (see also appendix 1). It is in the interest of the scientific community as a whole, and of the individual researcher to ensure as wide as possible dissemination of scientific knowledge. The intellectual property legislation protects the author's intellectual property rights, and the author also in the outset holds the copyright. In the traditional publication process, the publisher of the publication requires transfer of the copyright, to support a business model where he recoups the cost of the publication process by charging for access to the publication. Open Access is a mechanism by which license to access and use of scientific information can be provided.

There are two routes to Open Access:

- *The Gold Route*

The Gold route is primarily implemented through Open Access journals whose business model is based on the author or his sponsors pay up-front for the publication costs. The journal manages the peer review/quality control process, and the cost for that is covered through the article processing charge.

- *The Green Route*

The Green Route is based on parallel publishing of a paper, a proceeding or a book published in the institutional Repository, requires copyright permission/ license from the copyright holder, and often works with embargo periods. The peer review is managed by the journal which has accepted the paper.

Scientific paper

A scientific paper is the end product of a long process involving many contributors. The ones that invest most effort in this chain are the scientists involved in the scientific process, the institutions hosting the scientists and enabling the scientists to carry out their work, and the funders providing the financial means making it possible to carry out the work. For peer reviewed scientific publications, the publishers have a role in managing the quality assurance process of the publication. The review process itself is carried out by the academic community on a voluntary and unpaid basis. Then, the publishers disseminate the publications through their publishing channels, primarily scientific journals.

2. Copyright

One of the first steps towards a widespread understanding of Open Access is how copyright is secured. Researchers rarely know how the copyright system works. In particular, it is important that researchers understand what rights are granted to them by law and that they have the legal right to control how their rights are transferred to other parties. To this day, most researchers often still sign that special kind of contract called 'copyright transfer form', more or less automatically, thinking that its

content cannot be changed, a sort of law of nature of scientific publishing. This is not the case: the copyright transfer form is a contract and, like any other contract, it can be modified at will by mutual agreement of the parties (see appendix 2 for more information on copyright). The role of the publisher in the production of scientific information should not warrant a transfer of copyright on permanent and exclusive basis, which is often the case in publishing contracts.

3. Licensing

Getting free access is only one element of Open Access. The licensing conditions on how a user is allowed to use the information is equally important. This needs to be explicitly stated and controlled. In some Open Access publication licenses used by publishing houses, the conditions are too restricted. The Scholarly Publishing and Academic Resources Coalition (SPARC) is an international alliance of academic and research libraries that work together to create a more open system of scholarly communication. It works in the fields of Open Access publications, Open Data, and Open Educational Resources. One of the things they have developed is the SPARC

Author Addendum¹, which is an addendum to a publication that allows the author to retain control over his work and its future use. The major source for licensing agreements is Creative Commons². The most used license is CC BY (4.0 International license). The CC BY license is preferred by many research funding bodies. This license allows for maximum dissemination and re-use of open access materials: under this license users are free to share (copy, distribute and transmit) and remix (adapt) the contribution including for commercial purposes, providing they attribute the contribution in the manner specified by the author or licensor (*read full legal code*).

1. <http://www.sparc.arl.org/resources/authors/addendum>

2. <http://creativecommons.org/>

4. Position on Open Science & Open Access

Having clearly defined a point of view, CESAER:

- Fully recommends Open Science policies, including Open Access publications and Open Research Data policies, to be set up by its member institutions and their employees;
- Supports Open Access in its widest form, where use of the scientific material is open for all as long as the originator is credited for its creation;
- Recommends the use of either the Green Route (parallel publishing) or the Gold Route (upfront payment by the author of an article processing charge). CESAER discourages the hybrid model, a model that combines the traditional subscription model with optional article charges to publish that article in open access, because it only leads to higher costs for the scientific community;
- Finds the right to use published material in text and data mining applications particularly important. This is an important way of identifying relevant scientific information in the information age. If needed, legislative action in copyright law should be implemented to allow such use of published material.

CESAER will work with other stakeholders in the research producing and research using community, including the publishing industry to further develop and promote fair business models that provide Open Access to scientific literature, and to ensure that appropriate quality assurance procedures are applied to such literature (see appendix 3 for more information about stakeholders). CESAER shall also provide guidance and information resources to our institutions and their employees that can promote the practical implementation of Open Access. See also appendices 4 and 5 for a motivation for scientists and recommendations for institutes, respectively.

Tools & best practices

A range of tools and best practices along the research lifecycle is intended to be the focus of future position papers of CESAER's existing Task Forces:

- Open Notebook Science
- Open Research Data & Research Data Management
- Open Research Software & Open E-infrastructures
- Open Access Strategies
- Open Educational Resources

5. Conclusion

It is in the interest of the scientific community as a whole, and of the individual researcher to ensure as wide as possible dissemination of scientific knowledge. The basic idea of Open Access is to make literature available online in digital form, free of charge to the user, and free of unnecessary copyright and licensing restrictions. The academic community has been slower than expected in realizing that the emergence of the Internet called for a fundamental re-thinking of the whole system of scientific communication, though.

CESAER fully recommends Open Science policies, including Open Access publications and Open Research Data policies, to be set up by its member institutions and their employees. Both the use of the Green Route (parallel publishing) and the Gold Route (up-front payment by the author of an article processing charge) are acceptable to CESAER. Also, CESAER shall provide guidance and information resources to its institutions and their employees that can promote the practical implementation of Open Access.

Appendices

Appendix 1: Ethical appeal

The academic community has been slower than expected in realizing that the emergence of the Internet called for a fundamental re-thinking of the whole system of scientific communication. This is somewhat surprising. The Internet and what Thomas Jefferson loved to call the ‘Republic of Science’³, in fact, seem to be – at least in principle – a perfect match, the former being a low-cost, highly efficient, flexible, world-spanning tool to serve the needs of the latter. So, why is scientific communication still largely organized around the same paradigms that had been ruling the paper-based world for over two centuries?

Scientific communication

The answer to this otherwise puzzling question is that the Republic of Science is a complex social system and that the publication part of it is crucial to its inner workings. Consequently, it is not a simple utilitarian matter of replacing a tool (paper) with a more efficient tool (the Internet): the challenge is to gradually replace a well-established scientific communication system based on paper to a new one that exploits the full potential of the Internet. That requires deep re-thinking of what scientific communication is really all about. But deep re-thinking is hard; it is so much easier to uncritically preserve the existing system, simply with bits instead of paper, particularly if scientists feel that pausing for a while to re-thinking fundamental questions is a luxury that they cannot afford in the ever more competitive world in which most of them live.

Emergence of the Internet

In this regard the role of learned societies can be very important. They can take the lead in addressing fundamental issues and showing the way forward to the whole community. Regarding scientific

communication, one aspect that needs to be better articulated and discussed – and learned societies are particularly well-suited to frame and lead such discussion – is that the emergence of the Internet represents an ethical issue for all scientists. Once they have at their disposal, in fact, a tool that allows them to ‘publish’ their results in a way that every scientist in the world (at least, those with Internet access) could read them for free, do they not have a moral obligation to do so instead of committing them to the usual pay-for-access system? A moral obligation not only deriving from shared membership in the Republic of Science, but also from the consideration that if scientific results are freely available online, the cultural, educative and economic impact of those results is maximized with respect to publishing them in a pay-for-access publication. A consideration that is particularly binding for scientists whose salary (or whose funding) comes from public sources.

Communication to the public

In other words, in the Internet age scientists need to understand that they are – personally and collectively - responsible not only for producing their scientific results, but also for taking a close interest in the specific ways in which they are communicated to the public. In the paper age they did not need to think about this issue. Now the landscape has changed and they have an obligation to fully consider the ethical implication of the changes brought about by technology.

This is why the movement of Open Science is one of the most important developments for the scientific community in our time.

3. [Letter to John Hollins, Washington, February 19, 1809.](#)

Appendix 2. Copyright: in perpetuity & exclusively

Why should it be in perpetuity, for instance, until the expiration of copyright, 70 years after the death of the author? And why should it be exclusively? While such extreme transfer of rights makes perfect sense from the publisher's point of view, it does not serve well neither researchers, who entirely lose control of their works, nor science, that ends up depending on

other parties for access to the very fruits of its activity. The contribution of publishers in the scientific publishing process hardly warrants them to get the role of permanent gatekeepers, and determining the charging policy for the access to the products of the scientific community. Open Access offers alternative models for control of copyright and funding of the publishing process.

Appendix 3. The position of key stakeholders

European Commission

The European Commission has in Horizon 2020 issued guidelines for Open Access for projects funded through a Horizon 2020 grant⁴. The guidelines document quotes the Rules for Participation⁵, which state 'With regard to the dissemination of results through scientific publications, open access shall apply under the terms and conditions laid down in the grant agreement'.

Science Europe

Science Europe is organizing the research funding organizations of Europe. It has published a position statement on the transition to Open Access⁶, where it encourages all stakeholders to adopt Open Access principles.

National research funding organizations

The national research funding organizations have more or less unanimously adopted the policy, and in some countries the requirement for Open Access for publicly funded research is laid down in law by the governments. Universities, including the CESAER member institutions, have adopted the policy.

4. http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-pilot-guide_en.pdf
5. http://ec.europa.eu/research/participants/data/ref/h2020/legal_basis/rules_participation/h2020-rules-participation_en.pdf
6. http://www.scienceeurope.org/uploads/PublicDocumentsAndSpeeches/SE_OA_Pos_Statement.pdf

Appendix 4. Motivation for scientists

- Scientists contribute to the body of scientific knowledge in the world. One of the responsibilities is to ensure that the created knowledge is made available as widely as possible to those who may benefit from it;
- Several studies show that Open Access publications are more accessible, and receive higher citation ratings than non-Open Access publications;
- By choosing Open Access publishing contracts a better control over the copyright of work can be retained;
- By carefully choosing Open Access publication channels, scientists can be a part of a movement that can influence publishers to reduce the user costs for access to scientific literature;
- Guide peers to publications in Open Access by adding them to social media profiles such as www.academia.edu.

Appendix 5. Recommendations for institutions

- Adopting an Open Access policy, and pursue its implementation vigorously, by installment of mandates to
 - Ensure that there is constant leadership attention towards the policy;
 - Disseminate motivational information on what Open Access is about;
 - Ensure quality control.
- Ensure that mechanisms are available in the institution to facilitate the use of Open Access by their authors of scientific publications, such as:
 - access to open repositories, either operated in their own organization or in cooperation with other trusted organizations;
 - temporarily transitional funds to invest in and organize the article processing charges for the publication of Gold Open Access publications, because it contributes to more efficiency and better deals, for example to support faculty members who don't have access to other funds;
- support in quality assessment of Open Access publishing channels.
- Provide competent advice and guidance on
 - how to fulfill contractual obligations on Open Access by funders;
 - negotiating copyright licensing with publishers;
 - practical procedure for deployment of publications in the appropriate repositories.
- When deemed necessary, implement internal incentive mechanisms to encourage Open Access publication, such as providing a reward for Open Access publications, alternatively reducing the incentive for non-Open Access publications if a reward system already exists.

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