

Open Access improves returns to public research funding: A perspective from Germany

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Abstract. Open Access has become a major mechanism whereby the returns to public investment in research are maximized. Initially, the information technology revolution resulted in new dysfunctions and inequalities of scholarly communication, such as large price differences among publishers and journals; widespread usage limitations and re-use restrictions based on copyright; or systemic manipulation based on unmerited co-authorship, undue delays in peer review, and even outright fraud. Open Access mitigates or resolves these dysfunction and inequalities because (a) it provides fair returns to all stakeholders; (b) offers unlimited access and efficient usage; (c) enhances quality safeguards (i.e. transparent processes including easier detection of plagiarism and fraud); and (d) enables free sharing and re-use (e.g. CC-BY license).

Keywords: Open Access, scholarly publishing, public return to investment, publication funds

1. Continuity and change in scholarly communication

For centuries scholars have created knowledge, usually supported by public funding. Meanwhile, publishers have played an important role in organizing the quality control and dissemination of published knowledge. The information technology revolution and the concomitant globalization of scholarship has contributed to further accelerated growth of published knowledge. Simultaneously these developments have contributed to changing roles among key stakeholders. For example, while libraries were the chief repositories of knowledge for centuries, they now are increasingly a conduit to publications held at publishers' sites.

For the past decades, I have been both a witness and participant. Prior to my election as the President of the Leibniz Association, I led major sociological research centers in Germany and the United States. Also, I am the founding editor of the *European Sociological Review* (published by Oxford University Press) and have served scholarly communication in varying roles as editor and reviewer. Currently, I am also a member of Science Europe's Governing Board. Finally, as a sociologist I am very much aware of newly increased equalities as well as inequalities in access to knowledge. I will return to this topic throughout the following reflections.

This paper is structured as follows: I first review the tensions between the fundamental and shared goals of scholarly communication and current systemic dysfunctions centering on price, copyright and manipulations. Next, I turn to open access as an innovation, and the principal actors and approaches involved. Third, I outline the approach of the German Alliance of Research Organizations to open access. Fourth, I review the status quo of open access with regard to infrastructures and the Green and Gold

road to open access, focusing in particular on the Leibniz Association. I then look at the funding of open access publishing, including article-processing charges. In conclusion, I review the major challenges of the transition to open access.

2. Principal and shared goals of scholarly communication

Scholars, funders and institutions are interested in maximizing the returns to public investment from research. The prime concern therefore is unlimited online access to knowledge by readers. The value of unlimited access increases if that access is efficient, i.e. quick and immediate. Concomitant is efficiency in usage, implying unrestricted re-use with the widest set of rights. This requires a transformation of scholarly publishing. Meanwhile, the importance of safeguarding quality through peer review and other measures remains, though new challenges have to be addressed. Likewise, the principle persists according to which returns to all participants – i.e. tax payers and funders; authors, editors and publishers; students, teachers and institutions; scholars and scholarly societies – should be fair. Thus, innovations and systemic changes require adjustments to account for new equalities and inequalities while ensuring fairness.

3. Systemic dysfunctions

Currently, the system of scholarly publishing is characterized by scenarios of suboptimal access and usage. Research and teaching requires unfettered and easy access to the whole corpus of academic publications. The digital era demands the free distribution of text and data and corresponding re-use rights. In the subscription-based model, both requirements are not met at present. Quite the contrary: due to rising and partially extremely high prices, access is increasingly limited. Moreover, antecedent copyright regimes restrict the use and re-use of text and data.

Most publishers ask for an exclusive transfer of copyright while authors are seldom in a position to negotiate the retention of copyright. However, publishers' exclusive rights lead to a deprivation of authors and their funders because of the

- necessity to re-buy publications, aggravated by steep price rises;
- limitations in use and re-use, which are particularly obnoxious given that digital technologies would enable interesting and important usage scenarios.

Hence, in the future the payment of publishing services should not include the transfer of copyright.

A second dysfunction has emerged, internal to scholarly communication and the publishing system. Indicators are the manipulation of impact factors, an undue length of the peer review process, a declining readiness to review, unmerited co-authorships, high-profile cases of fraud and plagiarism, and a general tendency to merely count publications instead of reading them.

We must therefore reform scholarly publishing.

4. Open access

A decade ago, the scholarly community laid out its vision for open access, based on the idea that new digital technologies have enhanced communication in ways that allow free and immediate access to

published findings with extensive re-use rights. Obviously, there is some variation in definitions of open access. I think that the spirit of the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (2003), signed by more than 380 institutions worldwide, is best reflected in open access publishing under the Creative Commons By Attribution (CC-BY) license, which means:

- You are free to
 - share, copy, distribute and transmit the work,
 - remix and adapt the work,
 - make commercial use of the work.
- Under the following conditions:
 - You must attribute the work in the manner specified by the author or licensor (but not in any way that suggests that they endorse you or your use of the work).

At the international level there is a growing willingness to organize a transition to open access publishing – as reflected in the contributions by Janet Finch, John Vaughn and Adam Tickell. Particularly noteworthy are the efforts at the European and global level, such as those of the European Commission, Science Europe and the Global Research Council. The position of Science Europe – of which I am a member of the governing board – is the following:

- Open access to research results of publicly funded research will have measurable benefits to the scholarly community, the industry and the public;
- Research funding has to include funds for publishing;
- Publishers and journals must have transparent cost structures;
- Publications should be published in open access journals or be made available in repositories no longer than six months after the first publication. For the arts, humanities and social sciences, this embargo must not be longer than twelve months.
- Publishers must provide regional and national reductions in subscription prices that correspond to the commencement of open access publishing.

Overall, to move forward, some of the key stakeholders in scholarly communication must amend their strategy. Publishers should

- switch to business models not dependent on exclusive rights and copyright transfer;
- refrain from demanding inadequately high subscription charges;
- provide clear cost structures and transparent pricing mechanisms.

Research institutions should develop or continue to

- offer publication services not dependent on exclusive rights and copyright transfer;
- build up funding structures compatible with new business models not dependent on exclusive copyright transfers;
- build up and retain infrastructure supporting scholarly communication and lessening their dependence on the oligopolic academic publishing industry.

Legislators should

- provide an inalienable right of secondary publication to authors of publicly funded research publications.

Those steps would help to bring about a new equilibrium among stakeholders with fair returns and sufficient funds to ensure access to scholarly publishing for readers and authors not marred by inequality. Such situation is contrary to the current situation which hampers scholarly communication as well as social progress.

5. The German Alliance Initiative

All major research funding and research performing organizations in Germany have been coordinating their open access policies through their priority initiative “Digital Information” since 2008.¹

The Alliance of German Science Organisations

- Alexander von Humboldt Foundation
- Fraunhofer Association
- German Academic Exchange Service (DAAD)
- German Academy of Sciences Leopoldina
- German Council of Science and Humanities (Wissenschaftsrat)
- German Rector’s Conference (HRK)
- German Research Foundation (DFG)
- Helmholtz Association
- Leibniz Association
- Max Planck Society

In particular, the Alliance is supporting the transformation process towards open access publishing. The main points are:

- Adding open access components to subscription contracts, i.e. Alliance and/or national licenses must include provisions securing rights for authors to make their publication available in open access (green road);
- Building up of funds to cover open access article processing charges;
- Supporting institutional and international infrastructures for open science, including publication and data repositories, virtual research environments and open access publishing operations.

The Alliance states, that Green Open Access is indispensable for the foreseeable future, since subscription-based journal publishing is still predominant. Indeed, we expect that the green road may be the more common road to open access for some time to come. However, we propose to move forward as follows, preferably in collaboration with publishers:

- a maximum embargo period of six months in the sciences and twelve months in the humanities;
- a preference for the version of record to be available after the embargo period (the concept of a ‘moving wall’);
- the deposit of the version of record (or the author’s final manuscript) in any repository run by a public research organization;
- standard licensing that includes rights for text and data mining.

¹The English language version of the website <http://www.allianzinitiative.de/en/start/>.

Priority Initiative “Digital Information” of the Alliance of Science Organisations in Germany. Extending the Cooperation 2013–2017.

Statement of Outlook and Objectives for Open Access²

“The term “open access” describes the goal of making knowledge globally accessible and usable in digital form without financial, technical or legal barriers. In order to ensure that scientific knowledge – continuously extended, modified and documented in scientific publications – is made available in accordance with this principle, a forward-looking digital research environment must ensure well-organised and sustainably funded access to publications without costs or obstacles relating to usage rights.

Summary of progress

One key outcome of activities in this priority area is the consistent positioning of the Alliance of Science Organisations in Germany on key issues in open access publishing. The academic world and politicians now recognise the fact that the Alliance is speaking with a unified voice, for example through the influence of relevant papers on draft legislation and initiatives. Brochures produced by the working group have raised awareness of the issue of open access at universities and research institutions. This was reinforced by further awareness-raising measures (such as special events and panel discussions), establishing the group as an important partner in a national and European context. The introduction of the Open Access component in Alliance licenses deserves mention as an important building block for the paradigm shift towards open access.

Outlook and objectives 2013–2017

So far, activities have been focused on the provision of detailed information about open access in order to promote this publishing paradigm. In the future this focus on research policy will be systematically complemented by recommendations and guidelines that more effectively address the concrete implementation of open access by universities and research institutions and, if necessary, in different fields. In this way support will be given to effectively promote the transition to an open access culture. The concrete aims of the working group are to promote funding for the “golden road”,³ define criteria for the adoption of open access publication fees, work to increase the content of open-access repositories and collaboratively support international open access infrastructures. Due consideration will be given to discussions and initiatives of Science Europe and the newly founded Global Research Council”.

6. Funding article-processing charges

The Alliance has noted that open access journals operating on the basis of article processing charges is a fast growing segment. We welcome publishers’ engagement and are developing corresponding fund-

²http://www.allianzinitiative.de/fileadmin/user_upload/Priority_Initiative_2013-2017.pdf.

³The *golden road* refers to the immediate publication of scientific papers in relevant periodicals in accordance with open access criteria. An alternative is the *green road*, where scientific publications are archived on open access document servers (repositories) either at the same time as publication or at a later date. The golden road requires an open access business model; the green road does not change the current subscription model.

ing structures. However, since overall funds are limited, any growth of open access publishing is only possible when funds previously committed to subscription budgets are converted.

A publication fund signals an institutionalized shift of library funds to open access publishing. Such funds assist authors in their relationships with publishers by covering publication charges. Hence, simultaneously, they are instruments enhancing the institutions' ability to reorganize their relations with publishers. Funds are also a new solution that allows moving forward scholarly publishing by attaching new conditions. Most important here is the new copyright and use regime as expressed in OA CC-BY.

It is the responsibility of research funders and organizations to cover authors' publishing costs. However, there are authors not funded directly via grants or employment. Likewise, the means of their funder or employer may not suffice to cover article-processing charges. We believe that, internationally, funders will support business cases, which include provisions for fee waivers.

In Germany, all the important funders, i.e. the Alliance organizations as well as the Federal Ministry of Education and Research, cover publication charges as part of their project funding. Moreover, Alliance research organizations such as the Leibniz Association or the Max Planck Society, may, additionally take a principal decision to fund publication charges. Due to devolved governance structures, such a decision is taken at the institutes' level. For example, the Leibniz Association has 86 member institutes who decide and implement autonomously. Of course, at the university level, project funding is quite different. Most universities do not yet have policies for funding article-processing charges. Hence, most scholars at such institutions have limited access to publication funds. Moreover, funders need to address the fact that regularly project funds do not cover APCs if a publication from a project is published after that project has ended. The German Research Foundation (DFG) co-sponsors a growing number of university publication funds. Universities may apply to the Open Access Publishing Program of the DFG for financial support if they are willing to set up funds as well.

7. Conditional publication funds

Principally, article-processing charges should be used to buy open access with CC-BY. However, it is necessary and desirable to attach further conditions, such as:

- Quality assurance in peer review and editorial standards;
- Homogenous metadata;
- Transfer of articles to repositories;
- Clear cost structures;
- Transparent pricing mechanisms.

These conditions serve varying but equally important goals. Firstly, the transition to open access publishing must lead to high-quality outcomes. Secondly, it must support the building up of an open science infrastructure. Thirdly, it must serve cost control.

Hence, many open access funds exclude payments to hybrid open access journals because of the "double dipping" risk and a shared assessment that the hybrid business model does not foster the transition to open access.

8. Open access publishing without commercial publishers

While the majority of stakeholders favor cooperation, some stakeholders argue that scholarly publishing may be organized without publishers. They believe that the scholarly community is better suited to

organize the publishing process. Already, there is a large number of journals, including some high-profile journals that are mainly supported by subsidies and in-kind contributions of institutions, societies and scholars.

Let me give you some examples from the Leibniz Association:

- For a decade the central library for medicine (Zentralbibliothek Medizin) has been publishing seventeen journals for a variety of medical societies, as well as sponsoring a broad range of conference proceedings and research reports.
- The open access journal *Economics* started in 2007 and has been listed in the Social Science Citation Index since 2012. It is the first economics journal with open peer review.
- The Leibniz Center for Informatics (Schloss Dagstuhl) sponsor several high-quality publications series for which publications fees are heavily reduced through workload sharing and industry sponsorship.

9. Challenges ahead

It is early days for publication funds. Quite frequently, the continuous provision of resources to keep publication funds solvent is a challenge. More funds must be shifted from subscription budgets to open access publishing. Equally, monitoring the manifold independent payments to publishers is a pressing challenge.

The transition requires further collaboration from other stakeholders, particularly publishers. We need a clearer picture of the publishers' service costs. Also, publishers should develop transparent scenarios for moving established subscription-based journals to open access. Overall, the appropriate and therefore legitimate level of article-processing charges is still unclear. Obviously, a higher quality of service (review, publishing, visibility) may justify a higher fee. However, for many of the journals charging a higher fee, particularly for so-called hybrid journals that merely offer an open access option, there is little transparency with regard to the cost, service and corresponding reduction in subscription prices. It should be clear that a failure by publishers to address this issue will trigger a more rapid and global build-up of a scholarly publishing infrastructures independent from publishers.

10. Conclusions

Returns to public investment are maximized if published knowledge becomes a public good. That is to say, the current comprehensive and rapid technological changes must be harnessed for a transformation to the open access model to scholarly communication. This is not to say that market mechanisms should be abolished. Quite to the contrary. But to create a more demand-oriented market we

- ask publishers to come up with a transformation schedule for their journal portfolios;
- expect further experiments with new formats and services to harness the opportunities offered by open access;
- must convert more subscription budgets to fund open access publishing and infrastructures.

In this transition process, publishers must realize that the current offer of so-called hybrid journals is not acceptable. In a next step we must explore market-based and adequate levels for article-processing

charges to ensure that publishing is of the same or even higher quality compared to current “regular” publishing. Moreover, the road to open access must be inclusive, which means that publication funds and fee waivers must be structured in a way that all authors have equal access to open access publishing.