

PLAN S AND OTHER PROGRESS FOR OPEN ACCESS TO KNOWLEDGE

Stefano Bianco, Laura Patrizii***

*Laboratori Nazionali di Frascati, INFN – Frascati (Roma), Italy - Member of the Expert Group in cOAlition S.

**INFN, Sezione di Bologna – Roma, Italy - Member of the of the Open Access group in Science Europe.

Abstract

The principle of Open Access (OA) is about the breaking of any paywall to the knowledge coming from research funded by public monies. After twenty years of statements not much has changed and the market of scientific journals is still in the hands of oligopolistic companies. Plan S is a disruptive initiative created by research funders in Europe and US which aims to foster the transition to Open Access by acting against hybrid journals and citation index. The Italian Institute for Nuclear Physics (INFN) has signed Plan S and, in close relationship with the Universities, the Conference of Rectors (CRUI), and the National Research Council (CNR), is outreaching the academic communities to discuss strengths, weaknesses, opportunities and threats. In this work both a description of Plan S and a brief status report of other initiatives are given.

Keywords

Plan S, Open Access, Open Science, Research Evaluation

1. Introduction

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In this article both a description of Plan S and a brief status report of other initiatives are given.

It is an updated version of the work presented at the Workshop "*Open Science: new models of scientific communication and research evaluation*", organized by Virginia Valzano at the University of Salento, on January 30, 2019.¹

The work was born in the context of the INFN Open Access Working Group in collaboration with Roberto Barbera, Marcello Maggi and Dario Menasce².

2. Plan S and other progress for open access to knowledge

September 2018: eleven institutes members of Science Europe³ – an organization formed by European institutes and agencies active both in the scientific and the humanities fields – with the support of the European Commission and the European Research Council, created cOAlition S and launched Plan S⁴, a new initiative to accomplish the final transition to Open Access (OA) to scientific papers produced by public funding.

Plan S was designed by Robert-Jan Smits, formerly representative of the European Commission for OA, and further developed by Marc Schiltz, president of Science Europe.

The Plan S principle is that, starting from January 1st 2021, the scientific publications reporting on research funded by the members of

¹ See: <<http://www.ceit-ottranto.it/index.php/notizie/9-notizie/335-workshop-scienza-aperta-2019>>

² A reduced version of this work (in Italian) has appeared in *Biblioteche Oggi -Trends* (December 2019).

³ Cfr. <<https://scienceeurope.org>>.

⁴ Cfr. <<https://www.coalition-s.org>>.

cOAlition S must be published on compliant OA journals, platforms or archives.

The cOAlition S members - today about twenty among national and international funders, and private charity trusts (Wellcome Trust, Bill and Melinda Gates Foundation) - share the principle that science research funded by public money should be available to all parties interested, that the service of peer review should have a fair price, and that sharing of information should not be limited by a paywall.

Access to information is a primary asset, key to both cultural and economic development and basis of intellectual freedom. The colophon of the oldest printed book known, the Diamond Sutra discovered in Dunhuang, China, in year 1900 and kept today at the British Library, says that the book was printed in 868 a.c. "as per customer's will, for free and universal distribution". Galileo Galilei funds the principle of modern science publishing his *Dialogo sopra i due massimi sistemi* in 1632 with a Florentian publisher, Giovan Battista Landini, and reprinted again in 1635 at Leyden (The Netherlands) with publisher Abraham Elzevir. Commercial publishers realise the importance of science communication, but the academic community still keeps control. With the journal «Philosophical transactions» founded in 1665, the Royal Society and similar academic societies join the world of scientific publishing.

Today, access to science publications funded by public money is made difficult thanks to a publishing system owned by an international oligopoly. Since the end of 1990's, subscription costs have grown above any inflation index. Weirdly, technological innovation such as the World Wide Web and arXiv⁵ have made easier to distribute the information, therefore reducing costs and increasing profits for commercial publishers. The main reason is that publishers do not pay any royalty to authors for the content (funded by public money) received. Besides, the service provided by publishers, the peer review, is performed by members of the scientific community with any monetary compensation. Last but not least paradox, in Italy the governmental research assessment is run exclusively on papers indexed on commercial databases (Web of Science and Scopus). Scopus is property of one of the major international publishers, in clear conflict of interest.

Thirty years ago, the advent of the internet created a potential for global and immediate sharing of knowledge. From here, the Open Access movement started in 2002 with The Budapest Open Access Initiative, followed in 2003 by the Berlin Declaration, that it is considered the OA manifesto: *Our mission of disseminating knowledge is only half complete if the information is not made widely and readily available to society.*

During the first ten years of XXI century the awareness of the scientific community improves, but action remains at the level of statements, with few concrete actions. An analysis of science publications showed (Fig. 1) how in 2016 only 15% of journals were immediately and completely OA.

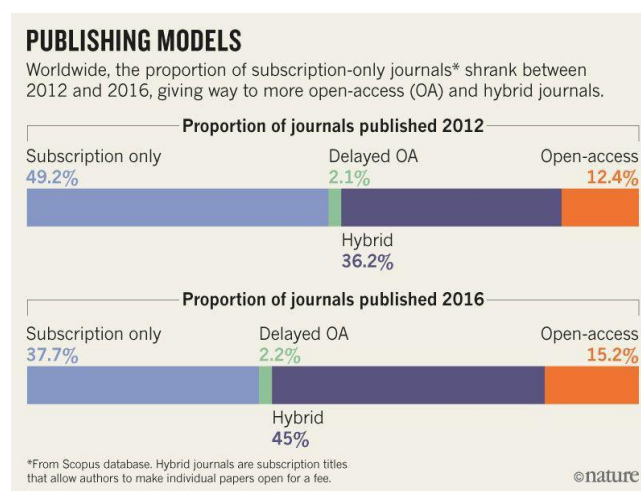


Fig. 1: Comparison of fraction of papers published in subscriptions, OA and hybride, in 2012 and 2016.
Source: HOLLY ELSE, *Radical open-access plan could spell end to journal subscriptions*, «Nature», 561 (2018), n. 17-18, <<https://www.nature.com/articles/d41586-018-06178-7>>.

During the 2010's two projects overcome the statements and provide factual actions. CERN, the European laboratory for nuclear research in Geneva launches in 2014 the SCOAP³⁶ project for the conversion of subscription funds to partnership quotas in a consortium that negotiates OA publications with commercial publishers.

In Italy, SCOAP³ is coordinated by the Istituto Nazionale di Fisica Nucleare (INFN) in collaboration with the Conferenza dei Rettori delle Università Italiane (CRUI) and the universities and research institutes collaborating.

⁵ Cfr. <<https://arxiv.org>>.

⁶ Cfr. Sponsoring Consortium for Open Access Publishing in Particle Physics, <<https://scoap3.org>>.

In 2018, INFN and CRUI join the OA2020⁷ initiative launched by the German Max Planck Institut, aimed to the conversion of the subscription market to a *publish and read* economic model. Even the general press acquires awareness of OA as a necessary tool for the freedom of thought. Collectives as the *Gruppo Laser* (Laser, 2005) describe the OA problem as similar to the generalised use of patenting and copyrighting.⁸

*How to explain the thousands of dollars earned by scientific publishers for each article? After all, the only service provided by the publishers is the quality control, by means of peer review, i.e., the revision made by experts as a condition for publication.*⁹

And also:

Open access refers to copyright rather than to patenting. However, the issue of publication of research is central to justify the officiousness of patenting in science: according to its advocates, it guarantees communication of innovation, in exchange for privatization. The development of a scientific information system freely available to the public would overcome the meaning of this partial "social motivation" of patenting, thus favoring its overcoming (Gruppo Laser, 2005).

During the most recent years, finally, the press grows in awareness and concern. Several articles appear on newspapers and magazines on the non availability of scientific information, with works (Borrelli & Sparano, 2019) that analyse in depth the economic mechanisms regulating the market of scientific publishing. At the same time several studies on the problem of open science as democracy and freedom are proposed in Italy and elsewhere (Pievatolo, 2017), also with reference to the Italian legislation on copyright (Caso, 2018) within the activity of AISA¹⁰). In both cases the problem of OA appears in very close connection to the evaluation of research.

To fully understand the reach of the Plan S initiative it is useful to analyse the publishing market and its models. Different kinds of OA exist, with the most relevantly used being the gold OA and the green OA. The former allows the sharing of

the final version of the paper after publication that proceeds via a payment of an Article Processing Charge (APC), copyright remains to authors and the content is immediately available. The latter, green OA, it is intended the deposit in open repository of the final version of the paper, which includes the suggestions received by the referees but not the proprietary typographical formatting of the journal, and the publication of the article on a subscription journal. The conditions on such self-archiving depend on the negotiations between author and publishers. An embargo period can be requested as condition for acceptance by the journal. In the field of physics, informatics and mathematics, normally publishers do not enforce any embargo periods. Recently, subscription journals (*pay to read*) and OA journals (*pay to publish*) have been joined by hybrid journals, i.e. those that ask for both. The hybrid model often gives rise to the phenomenon of *double-dipping*: the academic community pays for both reading and publishing. Besides, the publishing market is dominated by few big companies.

A recent study reports

Today the scientific publication market is dominated by six publishers. Elsevier, Springer-Nature, Wiley, Taylor & Francis, American Chemical Society e Sage own a share greater than 50% of the science articles [...] mainly via the subscription model. To allow access to their articles, between 2017 and 2018 European universities have paid 726 million euros per year, 65% to the six publishers (Borrelli & Sparano, 2019).

This peculiar market is explained by considering the role of publications in the academic system. The article published on a journal is a unique product, that cannot be replaced by another article published on a different journal. The publisher working in the context of the subscription model is effectively a monopolist. The widespread use of journal impact factor indexes (IF) completes the vicious loop. Data published by the Association of Research Libraries (ARL), organization that includes libraries from main universities and governmental agencies in Canada and USA, suggest that the subscription expenditure has grown by 166% from 1998 to 2018 (Fig. 2). This increase is larger

⁷ Cfr. <<https://oa2020.org>>.

⁸ Cfr. <<https://www.liberliber.it/online/autori/autori-laser/il-sapere-liberato-il-movimento-dellopen-source-e-la-ricerca-scientifica>>.

⁹ Translation from Italian is ours.

¹⁰ Associazione Italiana per la promozione della Scienza Aperta, <<https://aisa.sp.unipi.it>>.

than any increase of consumer prices (*consumer price index*, CPI in Fig. 2), and not justifiable with

the increase in the number of articles published (Fig. 3).

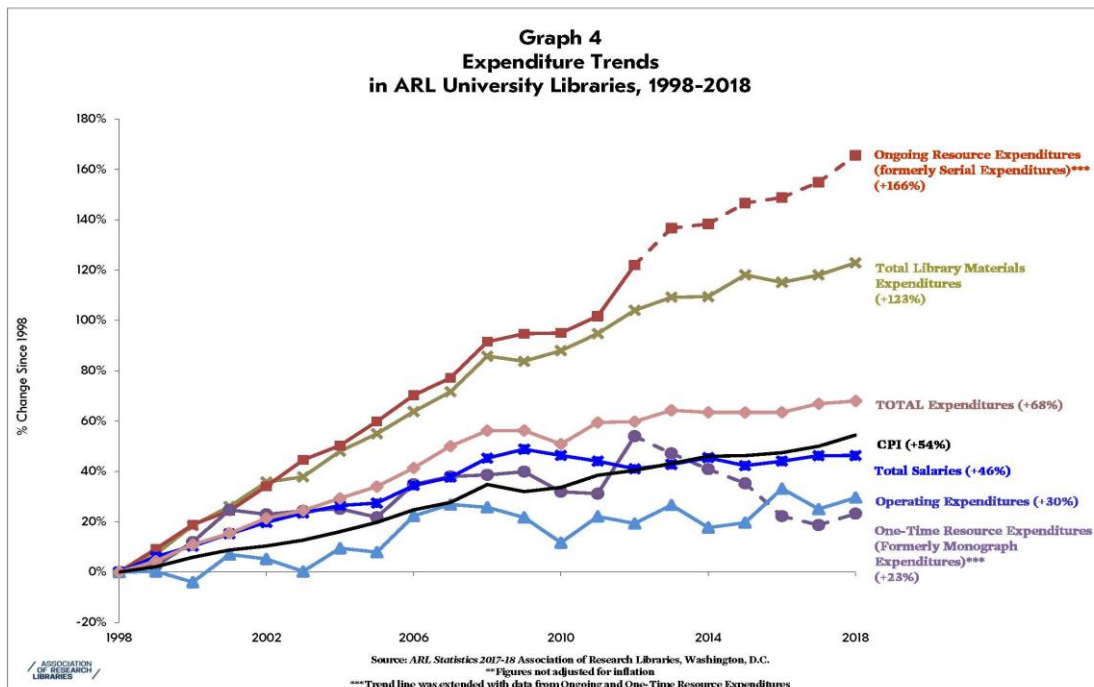


Fig. 2: Expenditure as a function of time for libraries part of ARL between 1998 and 2018.

Source: Association of Research Libraries. *ARL Statistics survey statistical trends*. <<https://www.arl.org/arل-statistics-survey-statistical-trends>>.

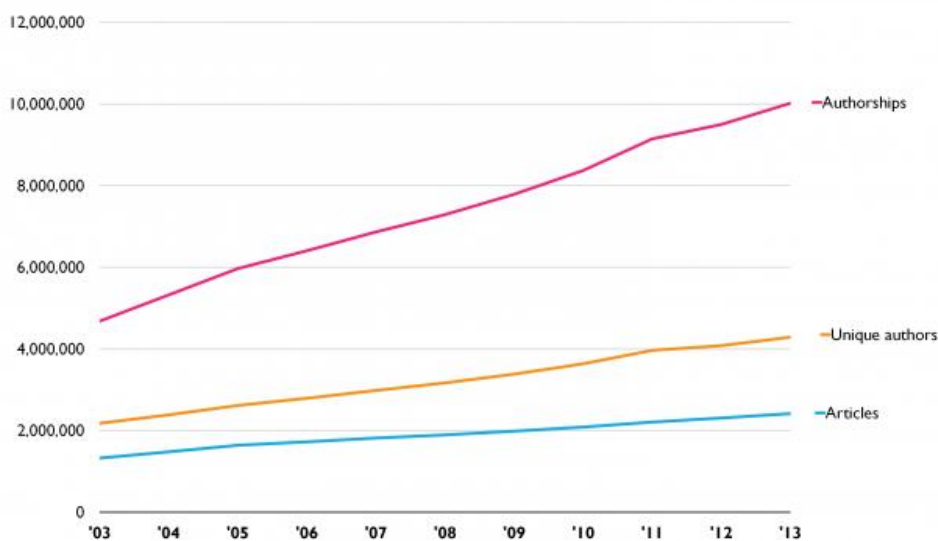


Fig. 3: Growth of the number of published papers from 2003 to 2013.

Source: Plume, A., & Van Weijen, D. (2014). Publish or perish? The rise of the fractional author....*Research trends*, 38, 16-18. <<https://www.researchtrends.com/issue-38-september-2014/publish-or-perish-the-rise-of-the-fractional-author>>.

Several institutes in Europe and US have open negotiations with publishers to agree on sustainable deals. Some of them succeeded¹¹, others stalled without an agreement reached (Galimberti, 2018; University of California, 2019).

Plan S aims to increase pressure on international publishers with the aim of affecting the current economic models and guarantee immediate access to scientific publications. The initiative was born in Science Europe and is synergic with other very concrete actions, such as OA2020 e Science 2.0 Research Alliance¹².

Plan S aims against the hybrid model with double dipping and against the journal IF. Plan S will not support any specific economic model as long as the content is made immediately available upon publications. Plan S commits the funders to deposit on open archives (green OA) the final manuscript, and not to pay for APC on hybrid journals, with the exception to those who subscribed transformative contracts. Finally, it commits the funder not to use the journal IF in the research assessment of its own researchers.

Plan S has been received with great interest while receiving positive reactions but also criticisms. cOAlitionS responded to criticisms by launching a public survey that received more than 600 feedbacks from researchers, librarians, scientific societies and private citizens. Following the survey, implementation guidelines have been clarified while maintaining the principles unchanged.

One of the three publication routes conformal to Plan S principles is the self archiving on open repository (green OA). Several tasks are in progress to foster the green OA conformity implementation. cOAlition S has recently announced the collaboration started with COAR (Confederation of Open Access Repository) with the objective to make the repositories compliant to Plan S. In depth conversations are also in progress with arXiv. INFN has deployed a pilot institutional repository, based on cutting edge technologies developed at CERN such as Zenodo and Invenio, open data and data conservation ready¹³. Finally, cOAlition S are aware that the social and human

sciences field is peculiar and it will take more time for the conversion of books and monographs to OA¹⁴.

In Italy, INFN has been active for outreach on Plan S since its launch, and many in-person events have been organized all over the country¹⁵. INFN has signed the DORA declaration and is discussing how to implement the exclusion of the Impact Factor in its carrier progression and funding selections. CNR and several other research institutes have Plan S in their agenda and the open access working groups are discussing implementation of principles. Transformative agreements are being negotiated by CRUI-CARE, the university consortium. There is a widespread support by research funders nation-wide to the Gallo law proposal, currently at the Senate for final approval, which proposes to modify the Italian law on intellectual property, by funding also a national archive of research based on interoperable repositories.

3. Conclusion

Plan S, as a provocative action, has stimulated a lively discussion on the culture of information sharing, and connections with research assessment. It is too early to judge whether Plan S will be successful or not, still, it should be taken as a great opportunity to provide fairness and sustainability to the sharing of knowledge.

¹¹Cfr. *Open access for authors at eligible German institutions: publish open access with Wiley*, <<https://authorservices.wiley.com/author-resources/Journal-Authors/open-access/affiliation-policies-payments/german-projekt-deal-agreement.html>>; *Projekt DEAL and Springer Nature reach understanding on world's largest transformative open access agreement*, 22nd August 2019, <<https://group.springernature.com/in/group/media/>

press-releases/springer-nature-and-deal-reach-mou-on-largest-oa-agreement/17090258>.

¹² Cfr. <<https://www.leibniz-openscience.de/de>>.

¹³ The repository (in pilot beta version mode) is available for testing at <<https://www.openaccessrepository.it>>.

¹⁴ cOAlition S <<https://www.coalition-s.org/about/>>

¹⁵ Cfr. http://home.infn.it/download/plan_s.html for a list of events at Italian universities and research centers.

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