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Open Science policy

This last session of our workshop encompasses all of the previous ones: software, edition, libraries, evaluation, and ethics. As a matter of fact, all of these topics are “political”. Scholars committed to Open science have abundant guidance at their disposal: good policy statements, including the UNESCO recommendation on Open science (November 2021) and papers issued by the European Commission, the DORA declaration on research assessment, the coalition S principles, national Open science plans providing guidelines etc. At the international level, prominent bodies (such as Academies and learned societies) as well as powerful entities (such as the G7 and the G20) actively support Open science. Open science has many allies, within and outside academia.

Yet, one of the first “political” issues I would like to stress is the discrepancy between this support (mainly the one by the Commission, the G7 and the G20) and their concomitant promotion of business secrecy/confidentiality: while businesses are allowed to protect the outcomes of scientific research conducted in their laboratories in the name of confidentiality, scientists funded by the public sector are encouraged to open their research in the name of Open science. How can science be harnessed effectively, in order to avoid that the mercantile sector has a grip on what is produced mainly thanks to the taxpayers’ money? How can we promote and protect academic freedom without jeopardizing fair and transparent partnerships with private industries?

The scientific community is committed to Open science, which increases the visibility and efficiency of its work. Yet, the contradiction between the official/institutional discourse fostering openness on the one hand, and the actual policies concerning working conditions, funding, and staffing on the other hand, poses the question of acceptability and mentality changing, highlighted mainly by our younger colleagues: how can Open science policies substantially change the game, without doing them a disservice? What king of funding and for whom? How to bridge the digital divide and the North-South divide? Does Open science really go hand in hand with “scientific diplomacy” or diplomacy *tout court*?

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We obviously need to build up trust between science and society. The UNESCO recommendation puts forward a new status for knowledge that includes the one produced by “minority” groups, such as indigenous (previously considered only under the prism of subject matter) or disadvantaged people. It also fosters openness to the so-called “lay people”. This implies not only participation of amateurs, but also co-decision with the “civil society” in order to determine directions or to prioritize subject matters. This can also mean new funding policies encouraging crowd funding. Yet, there are some tricky points to be discussed: incorporation of new knowledge needs appropriate methods and tools, in order not to be a burden on our workload; co-decision needs high-level “scientific literacy” for all, as well as clear definition of the “lay people” concept; crowd funding may become an easy way for public authorities to reduce their own funding and impose austerity. What requirements are to be met in order to pursue this exciting path towards new horizons for knowledge?

Institutional policy vs. scientists’ everyday life

Being an elected member of the main scientific body, the French National Committee of Scientific Research for 9 years, and now of the executive board of the French National Center of Scientific Research (CNRS), I have had numerous opportunities to question our authorities about the implementation “in real life” of their (utterly good) statements fostering Open science: while they create and put at our disposal Open science archives and repositories (such as HAL), or support platforms such as OpenEdition, they continuously keep their eye on rankings, prestige and some ill-named “excellence” (which is only for the few), and take no efficient measures in order to change the system. The answer to my question has always been that change is the task of the scientific community: it is “upon us” to monitor the implementation of the new principles. Recently, I have noticed that these principles are not followed. When it comes to promotions, the majority of our colleagues are still stuck with the ancient ones, and nobody has changed the application forms in order to comply with Open science.

The capitalistic sector, i.e. scholarly publishers such as the “big 6” (Elsevier, Wiley, Wolters Kluwer, Thomson Reuters, Taylor & Francis, Springer-Nature) and some others, specialized in the humanities (Brill, Brepols, Peeters), has a huge economic power: a turnover of 7,5 billion € (data 2014-2016), and a monopolistic control over 65% of the scholarly production. Despite that, they are posing as Open access supporters. They impose their negotiation standards and exert pressure to public institutions. Fortunately, some of those institutions refuse to yield to their demands. This is good policy: in 2018, CNRS interrupted its negotiations with Springer, considering the publishers’ demands exorbitant. Material

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published by Springer was therefore not available in the CNRS bibliography platform BibCNRS. Yet some of our colleagues protested against this interruption of service.

This good policy needs to match our concerns. Our institutions are aware of the pressure exerted upon scientists on behalf of the mercantile sector, through aggressive advertising or attractive offers. Our response in this case is not “upon us”, it should be a collective affair involving scientists and managers.

Another facet of good Open science policy is the support for all research fields. “Bibliodiversity”, the preservation of the publishing practice of each community, should be considered as important as biodiversity. Open science does not mean standardization of science. In this regard, the printed book, which plays a crucial role in the humanities and social sciences, should coexist with digital material. Institutional support to the digitization of periodicals in the humanities and social science field should be provided in order to prevent their disappearance.

Let us examine multilingualism. Its sense has often been blurred, considered only under the prism of “resistance to the hegemony of English”. Even though I acknowledge that “English is the lingua franca of scholarly communication” (p. 11 of the European Council conclusions published June 2022 and uploaded in our workshop website), I do not agree that one should take this for granted and limit multilingualism to extra-academic communication, or rely upon “automatic translation” in order to provide multilingual scientific papers to non-English-speaking readers. Open science can be a powerful tool for advancing involvement with the “main” languages (mostly European), promoting scientific translation (which is a professional activity and not a Google-provided service) by skilled translators, and enrich scientific terminology in all fields. In the Middle Ages, when Arabic- and Syriac-speaking physicians translated Greek medicine into their languages, they invented new words and shaped new concepts because there was a lack of specialized terminology. Nowadays, some colleagues from the French-speaking African countries have launched an initiative in order to promote philosophy written and taught in their regional languages, fostering academic bilingualism. They have little institutional support. The Helsinki initiative on multilingualism in scholarly communication should be disseminated among scientists and institutions. It does not refer only to communication with the broader public.

I have already posed the question of the discrepancy between institutional discourse and field policy concerning the science-business cooperation. In this regard, data mining is a kind of “deep ocean mining” which produces huge amounts of wealth. Open science promoters such as

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G7, G20, the European Commission, businesses, governments and other entities favor data opening in order to achieve greater profitability. Fortunately, there are policy guidelines protecting privacy at the European level (*general data protection regulation* [GDPR]), but little international regulation.

Let us examine the international facet of Open science policy, i.e. Open science as a driver for cooperation instead of competition, fostering fruitful collaboration North-South, but also South-South, and therefore limiting brain drain and enhancing equitable mobility of scientists worldwide.

The COVID19 pandemic shed new light on the need for scientific cooperation in order to face the new challenges. Scientists shared knowledge and data about the coronavirus. As a member of the international secretariat of a scientific NGO, the World Federation of Scientific Workers (WFSW), I supported the initiatives of opening science. The WHO "Solidarity call to action"[1], launched in the aftermath of the WHO General Assembly on May 29, 2020, prompted all relevant stakeholders, first of all governments, to "make the response to the COVID19 a public common good", through pooling knowledge, data, and, more importantly, intellectual property and technology. This call emphasized the utmost necessity for universal access and put forward "the fallibility of traditional ways of working when it comes to equitable access to essential health technologies". Unfortunately, as we know, this was endorsed neither by businesses, nor by international entities such as the World Trade Organization. The majority of governments (in theory supporting Open science) were reluctant to endorse such progressive policies.

In our scientific NGO, we work with colleagues from French-speaking African countries such as Senegal, the Democratic Republic of Congo, and Gabon, and Maghreb. Our Arabic-speaking colleagues are currently preparing the first Open science forum of the Arabic-speaking world to be held in December in Oman. We had a debate about Open science policies based primarily on access, infrastructures, data sharing etc. Most of our colleagues from the Global South consider that access is not the actual solution to bridge the scientific divide, because it limits them to the role of "consumers", not "producers" of science. The study by Irina Kuchma "Open Accesss Initiatives and Networking in the Global South"[2] fuels this debate and gives supplementary information about challenges concerning

[1] https://www.who.int/emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncov/covid-19-technology-access-pool/solidarity-call-to-action

[2] Kuchma, Iryna. (2018), "Open Access Initiatives and Networking in the Global South", in *Open Divide? Critical Studies on Open Access*, Litwin Books. https://doi.org/10.5281/zenodo.117657

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scientific research in the Global South. It also provides a ray of hope, citing some prominent Open science southern repositories and networks not limited to the English-speaking richer African countries. These initiatives often lack government support: they are the result of commitment by local scientific communities. An interesting example is Palestine: because of the occupation and the restriction of movement between Gaza and the West Bank, Birzeit University developed a repository for scholars and students unable to meet physically.

Yet some scholars such as a Gabonese emeritus professor of philosophy and economy, Bonaventure Mve Ondo, and a scholar from South Africa[3] think that digital infrastructures, archives and repositories, as well as interoperability and open-source software are indeed very useful and often touted as *the* way to reduce inequalities; yet this is far from being the central point of the problem, because, according to these scholars, the solution is not technical but political. Professor Mve Ondo examines the reluctance of scholars from African countries to fully endorse Open science: in his opinion, this movement is still considered "Western/Northern", i.e. biased by colonial views on knowledge utilized to perpetuate imbalance, not to mention to plunder national heritage and culture. A strong political will, which goes beyond "scientific diplomacy" and "good relations", is needed to shift the perspective.

Another challenge concerning the implementation of Open science in the Global South is the digital gap. In developed countries, this is often limited to computer or software use. In developing ones, this includes intermittent electricity, laptops for scholars and students (a strong request was addressed during the pandemic to public authorities concerning internet allowances and/or free laptops), network coverage, and sustainable, publicly funded and up-to-date telecommunication infrastructure. Given the tendency of some governments and elites to outsource their countries' digital infrastructure and privatize the education sector (including higher education), the scientific community should remain vigilant.

I would like to add here a couple of words about the "ecological footprint" of Open science (not exclusively, but mainly) in the Global South. Given the conditions of access to the network and the scarcity of hardware, one must consider the energy and budgetary cost of infrastructures and of data circulation: infrastructure design should be sober; data opening and

[3] Michele Pickover, "Patrimony, Power and Politics: Selecting, Constructing and Preserving Digital Heritage Content in South Africa and Africa," paper presented at IFLA WLIC 2014, Lyon, France, August 16–22, 2014. Cited by Harrison W. Inefuku, "Globalization, Open Access and the democratization of knowledge" https://er.educause.edu/articles/2017/7/globalization-open-access-and-the-democratization-of-knowledge

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data governing should be evaluated taking into account their footprint. Scientists have to make choices about the future.

Open science and the "civil society"

Open science builds confidence between scientists and "lay people", giving the latter access to scientific results or to the overall research process. Participative research, mainly through amateur data collection, is a long-standing tradition in some scientific disciplines such as astronomy, ecology, and natural sciences. Some other disciplines such as epigraphy or archaeology sometimes rely on amateur findings. Extra-academic contributors work hand in hand with professionals, and therefore are initiated into scientific methods, reasoning and practice[4]. This kind of research has institutional support and is considered beneficial for both scientists and citizens. The projects are launched and coordinated by scientists.

A specific kind of participation, which includes decision-making through appropriate methods, is the so-called "participative research-action" which involves professional scientists and amateurs, the latter considered "experts" on a particular topic, for example their own profession and working conditions. This has quite strong institutional support and may receive adequate funding. As an example, let me cite a pioneer research conducted by a specialist of ergonomics and the tramway conductors in order to improve the design of their seats. This research was based on mutual understanding and common definition of priorities.

Co-decision has been beneficial to medical research in order to redesign therapy and introduce new treatments. The contribution of "expert patients" was crucial in cases of diseases such as AIDS or diabetes.

Yet co-decision is a challenging question because there is no clear definition of "civil society". During the pandemic, we saw "scientific" communication *via* social media supported by "civil society" petitions, aimed at bypassing the usual validation process based on peer review and reproducibility. Various obscurantist and anti-science groups, allegedly being a part of the "civil society", are shamelessly thriving and exert pressure aiming at shaping academic curricula and orienting research e.g. in social sciences, cultural studies, gender studies, life science, agronomy, physics etc.

Open science nowadays goes beyond participation, fostering co-decision. Yet this implies scientific literacy effectively supported by public authorities. This support includes confidence in scientists who can

[4] Chiara Franzoni and Henry Sauerman, « Crowd science: the organization of scientific research in open collaborative projects", *Research Policy* 43 (2014), 1-20.

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interact with society not only in order to increase their “impact” or economic output, but also to contribute to quality education. Independent and quality science journalism facilitates this interaction.

Funding, staffing and the future of Open science

The quality and long-term sustainability of Open science infrastructures should be ensured by public authorities through adequate and permanent funding, in order to prevent Open science appropriation by private multinational companies such as the so-called GAFAM or the EdTech. The UNESCO recommendation insists that these infrastructures “should be not-for-profit and guarantee permanent and unrestricted access to all public”. Regarding the private sector, the recommendation showcases the role of UNESCO member states, i.e. governments, which should ensure that there is no “market dominance on the part of any commercial entity”. In theory, public funding and public monitoring of Open science implementation prevent commodification and profiteering. In practice, many governments are always pursuing neoliberal agendas aiming at reducing public debt: Open science funding through public- private partnerships can reduce public investment and therefore fuel substantial economies.

Yet public funding of Open science is a fairly consensual issue shared by both scientists and citizens. The controversial issue is crowd funding, somehow considered a reliable way to encourage citizen involvement with science. The inherent risk is to rely on this unsustainable funding provided by volunteers: as Franzoni and Sauermann put it[5], this can pave the way “towards outsourcing and disintegration of science”.

Open science requires up-skilling and reskilling of scientific and technical personnel in order to adapt to new methods and practices. Training policies should be designed in order to meet these new needs. Yet staffing means also hiring people whose profile includes mastery of their scientific domain *and* skills related to Open science: not only data scientists, but also (and most importantly) data stewards, skilled technicians and engineers, and good scientists including humanities and social science scholars. Preservation of the status of scientific personnel is crucial. We need permanent positions and adequate salaries and drastic reduction of precariousness; we also need to minimize the risk of “uberisation” of scientific workers, i.e. their transformation into mere platform contributors deprived of academic freedom and autonomy. Early career and post-doctoral researchers are particularly vulnerable.

In the European Open Science Conference (OSEC) which took place in Paris and online in February 2022, Tomas Susi (University of Vienna)

[5] P. 18, n. 36.

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gave a talk entitled “Open science needs no martyrs”. He focused on early career researchers who are always facing a flawed system based on metrics, rankings, prestige, and career “strategies”. He insisted on the need for change. According to him, “no researcher should have to martyr themselves to advance openness, given how valuable it is for science”. To achieve change and pursue the path leading to Open science, Susi thinks that one should empower young researchers. Change mostly depends on them. It also depends on other stakeholders, first of all on policy makers and funders.

Never yield to monopolies, broaden the horizon of science, democratize knowledge, pave the way for scientific cooperation as a driver for peace and mutual understanding, promote education in science and critical thinking: these are some facets of a successful Open science policy. Scientists can rely on important policy texts such as the UNESCO recommendation. Yet a recommendation is “soft law”: its implementation is to be closely monitored by scientists and citizens. Accountability of policy makers is indispensable in order for Open science texts not to remain empty words.

The digital revolution opens new possibilities to access, produce and share knowledge. Yet supporting Open science in theory does not guarantee commitment to its implementation in practice. This will depend on the balance of power. It is worth the effort. It is the only way for science, society and democracy to thrive.

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