Open Access and Open Scince in Times of Crisis
Marisa R. De Giusti

Slide 1: Good morning everyone, thanks to IFEES for inviting me to this conversation entitled: "The Open Access and the Open Science in times of crises.

Slide 2: I´d like to talk about the complex tensions impacting on the national and international context which may hinder effective adoption of open science; let us now touch upon the global changes, the obstacles, and the proposals shared in different spaces. Many are the sources included in this conversation, so, I'll mention some of them.

Slide 3: It should be noted that this crazy pandemia, which is unfortunately affecting us all, has highlighted the lack of sustainability of the scientific system for social service, in this case, healthcare but also communication and government. We need to advance towards an answer, not an individual answer, but rather a collective answer.

Slide 4: I'm particularly interested in showing this highly relevant work by LARIVIÈRE, Shu & Sugimoto, which was translated to Spanish on the Scielo Blog. Their work exposes the hidden publication system standards, these practices are uncomfortable because they have made clear that the academic publication system does not adequately serve society, because to a certain extent, as we will later see, it's a closed science and It places undue emphasis on mainstream english publications due to the requirements of the current evaluation system. This situation is really undesirable.
In January 2020, Welcome Trust declared COVID a global threat and asked researchers, journals and founders to share in open access all available public health information, and research related to COVID. A Public Declaration, encouraged by Welcome TRUST was signed by well-known publishers including Elsevier, Springer Nature, Taylor & Francis. They made a commitment to open a preprint repository for non-peer reviewed COVID-related works and also to publish peer-reviewed articles in the journal's website. But we know that this is insufficient! The above mentioned article by Lariviere et al reveals that there are thousands of previous articles related with COVID which were not included in this commitment, for example only at WoS database there appear since 1960, thirteen thousand articles about COVID and, only to mention one case, the three articles published in Lancet in January 2020 include references to 69 articles from those 13000, and these in turn, include more than 200000 bibliographical references. Again, this is only considering the WoS database.

Another issue reported is related to the controversial financial incentives to publish. The authors mention the China case. In the last decade, China encouraged their own researchers to publish in English journals outside the country, in English language. In November 2019 the Chinese government sent researchers to Wuhan, they produced new works and then the Chinese authorities completely changed this policy, now requiring that nationally-funded research be published only in national journals in Chinese language. I recommend you to carefully read Lariviere's article and also the Welcome Trust Declaration. You will be surprised to find that some publishers did not agree with the so-called Plan S.

Slide 5: There is a whole controversy and it is worth wondering what will happen when the pandemic is over. It is clear that we do not have any certainties nor much knowledge about this; every day we have more and more doubts, so the different groups should be aware of the need to value public information from an institutional perspective.

Slide 6: A possible answer could come from Open Access, Open Data and Open Science.

Slide 7: In Latin America, several countries, including Argentina, have passed national legislation on Open Access, which requires works to be deposited in open access repositories and other countries are

in the same situation or on the way to achieve this kind of legislation. In many countries, there are national nodes that show document records stored in the different national repositories. Especially here in Argentina, the National System of Digital Repositories (SNRD) offers in its website all covid-related records of the resources which are housed in different repositories. In turn, the different national Latin American nodes are harvested and made available by the Latin American node La Referencia to promote knowledge expansion.

Slide 8: I will not talk at length on the open access movement since everyone is familiar with it, suffice to say it is the free and open availability of scientific literature on the internet, it deals not only with documents, but with data, and discussing licenses that allow the reuse of those materials.

Slide 9: Open access pursues the elimination of barriers to the sharing of scientific information, moving towards a more useful model for society.

Slide 10: Open access, then, is expressed through: repositories which are (as we will see) web structures where academic and scientific production is deposited; harvesters, which collect the records of different repositories and expose them by providing services; and the route of journals with different levels of access, channels and fees of publication. For example, golden journals allow open reading but with publication fees; there are hybrid models where some articles can be read openly whereas others cannot; and diamonds without APC, that ensure publications can be read openly. The link at the bottom of the page provides detailed information on the various open access routes.

Slide 11: Here a possible and brief definition about what an Open Access repository is could be “a web infrastructure that enables depositing different contents”, if the content has been published, the version should be considered. Besides, the repository enables self-archiving, including cataloguing, preservation, statistics, access, querying, navigation and content browsing features.

Slide 12: Open Science, that is our focus today, is a much more comprehensive concept, because it means thinking and sharing science since the very beginning of the research process. This type of science is defined by its free, open, social, collaborative and dialectic nature and it should be transparent, reusable and easy to disseminate. We are now going to dive into each of these attributes separately, but bearing in mind that they all make an integral part of Open Science.

Slide 13: As Albert Einstein wisely put it: “Having the opportunity to know and understand the results of scientific research work is really important. It is not enough that acquired knowledge is registered, developed and applied only by specialists. Restricting knowledge capital to its own circle equals the death of the philosophical spirit of an entire people and leads to intellectual impoverishment. ”

Slide 14: So Open Science implies free availability of data, results and methods, coupled with the ability to perform tasks collaboratively in a research process where multiple actors aggregate value. Open Science, which includes Citizen Science, is a proposal for society members to participate in a crowd-sourced science. On the other hand, it puts into play a new agenda of rights, since it enables sharing multiple content free of restrictions. Last but not least, besides changing the mindset of the different participating actors, it implies new protocols, standards and practices.

Slide 15: Open Science is understood in a context of social movements, it emerges during times of change, and it has become more relevant than ever today due to the pandemic. However, Open Science can be interpreted in many different ways.

Slide 16: We will now move on to a key issue in this area, namely, the difficulties related to publishing in science today. On the one hand, the predominance of publications in five geographical areas (we will see this in a map). In addition, and the use of a lingua franca. On the other hand, the slowness and lack

of transparency of the peer review process. Furthermore, the payment of APCs. Finally, the lack of funding and new horizons and ideas for funding.

Slide 17: This is the current world geography of publications. Notice that there is a predominance of publications in China, Japan, Korea, the United States and Western Europe. Note, furthermore, that these publications draw the map of science and, as you know, there is a ranking prepared every year by the WIPO (World Intellectual Property Organization) which is a global innovation index and ranks 129 countries in the world according to 80 indicators. We are thus labeled by those parameters, which show the world activity in science and technology, but we need to start focusing on the objectives for a more sustainable development.

Slide 18: Let´s see other issues which emerge in the current publication landscape. In the first place, being the researchers constrained to certain journals, indexed by certain publishers, a set of external topics are imposed on them, sometimes disregarding locally-relevant topics. On the other hand, non-native speakers of the lingua franca may have difficulty exposing their research work. To make matters worse, there are institutional rankings that evaluate academic institutions based on their publications in the same indexed journals. Besides, as you all know, we have the "big deals", that is, increasingly larger and non-specialized packages which are purchased by academic institutions and libraries.

Slide 19: And here we can see another of our ills, namely, simplistic, bibliometric and classic evaluation based on indexes which are deeply discredited. Changes in our country and others: new legislation, such as the Argentinean law number 26899 that I mentioned previously, and its regulation number 753. It is difficult to comply with all this and think beyond, especially in a context where scientific system decision-makers have a doubtful understanding of the situation.

Slide 20: There are other ways to approach it but it is clear that scientists do not behave the same way when they are readers and when they are authors.

Slide 21: Personal reputation versus debate, problems of an ethical and political nature, challenges to institutions and this obsession with intellectual property all come into conflict, when in the final analysis it is the intermediary, particularly the publishers, who benefits.

Slide 22: The core of the conflict is to figure out on the one hand how to ensure the quality of the publication itself while proposing new forms for quality measurement.

Slide 23: Open Science proposes new approaches to reviewing as part of a new evaluation process.

Slide 24: Sheet 24: Here you can see an article that you will later be able to look at in detail and I think is very interesting, written by Mariano Fressoli and Valeria Arza, who recognize that Open Science has emerged once more and taking into account Open Science practices, propose new challenges and possibilities for resolution.

Slide 25: Listed here on the left are the stages of Open Science, starting with networking and collaboration, data collection and analysis, infrastructure, documentation, description, publication, reporting, evaluation and communication. Regarding this work I will mention only one issue: when we talk about the first point of networking and collaboration, we are clear that scientific collaboration has changed greatly during the last century from what was a research project with a few colleagues to true networks of researchers in certain areas. It has become obvious that science needs to include new tools and spaces for that type of collaboration, and in order to do this, it uses both open publications, or needs to use open publications, shared data and create platforms to share this new way of doing science.

What challenges do we have? What problems do we have? The first of these is that there are few incentives that favour the creation of collaborative practices, nor are there funding mechanisms that recognise the time-consuming work which is typical in interdisciplinary groups, where different subjects and even different languages are handled, and the rules and spaces for this negotiation among those who participate often exceed the time and capacities that researchers have, and all this has to be taken into account.

Slide 26: Here I am showing what will be the Unesco Open Science Recommendation (in preparation). Unesco has launched a questionnaire that we are completing to build precisely a global Open Science recommendation based on it. Here, you can see all the elements that make up Open Science, the research work, beginning with an hypothesis, the methods, including data, pair revision, use and reuse of research and so on.

Slide 27: When UNESCO proposes to draw up these recommendations, it mentions that "the question is no longer whether open science is a reality but rather how we all contribute to that open science". Considering all that Open Science means, it implies no longer just thinking about a publication, it is rather thinking about open access, open infrastructure, open educational resources, open data, open laboratories, open funding and open innovation, open science and open evaluation.

Slide 28: So there are, as you can see, differentiated instances of action ranging from individual aspects to research teams, institutions and public policies and all those aspects that need to be worked on.

Slide 29: We must create new modes of communication, evaluation and other spaces helping to this collective production, mobilizing many actors and building an appropriate infrastructure to achieve these ends.

Slide 30: COAR, the Confederation of Open Access Repositories, is calling for action with different points focused, precisely, on those different points and actors that intervene in all these processes, for example funders and institutions, thus inviting them to support the DORA declaration, which is a very interesting declaration and I say this because I know that today there are people from certain institutions related to it. DORA's general recommendation is not to use journal-based metrics for evaluation and the DORA declaration is now inviting all stakeholders, including institutions, publishers, and even funding agencies to sign it for certain specific actions. In particular, for institutions, it recommends considering the value of the impact that all the research results have, not only the publications but also the software, the data etc. etc., as well as a wide range of measures, qualitative and quantitative parameters to consider the real impact that an institution has; this declaration also makes other recommendations to the libraries, and so on and so forth.

Slide 31: I will speak specifically on repositories; and in that sense, COAR has established a whole project linked to next generation repositories, which will need to be interconnected and are going to be focused on resources, and those resources are, so to say, as little balls distributed over the Internet and which anyone can access, anyone can see what resources are treated in a safe way, what license it has according to that resource, who produced them, in which repository they are stored and so on, but also, anyone can propose within all this this section of next generation repositories, new forms of evaluation, new commented works, and so on. This means the protocols will require technical changes.

COAR has also made another series of recommendations, for example, for repositories that host resources on Covid'19, how these resources should be shared, commented on, broaden the spectrum of who and how they are published and a particular project that is also linked to this issue of placing repositories among others as the main articulators of this new open science, which is the Pubfair project, a sort of reference framework for open publication that works on a wide variety of research

results including pre-prints, data, software and everything be managed through repositories, also to support the processes of evaluation, peer review and discovery; thus, a collective management approach is proposed, a distributed management based on these repositories. The proposal is to use the functionalities of the repositories or pre-print servers to generate precisely, let's say, this ecosystem, this global publishing infrastructure. In its new work plan, as you will see, COAR talks specifically on how to develop the architecture and all these protocols that are needed to ensure a distributed and scalable peer review approach and at the same time, ensuring high quality.

Slides 32, 33 y 34: I'm referring to the call to action by the COAR that we have mentioned previously. There are aspects related to funders and libraries that we have already mentioned and also other aspects related to infrastructure providers, so that they can create or dare to provide models based on community governance and also aspects related to politicians so that they include diversity as an underlying principle in the context of open science and technology policies. As for researchers, COAR recommends using open and community infrastructures, that is, repositories, preprint servers, open publication services, for example journals, and that everyone works together to generate joint strategies.

Slide 35: There are worldwide initiatives to solve or mitigate existing problems; for example, regarding the use of English as lingua franca for publications. There is an initiative, which is called the Helsinki Initiative for Multilingualism. The "In all languages" campaign is a wake-up call for science policy managers, leaders, universities, research institutions, research funders, libraries and researchers to promote multilingualism in scientific communication and it highlights the need to find the mechanisms to deploy an adequate infrastructure to support scientific communication in multiple languages.

Slide 36: A huge problem in materializing open science is fully understanding what it is about. An open educational resource translated into Spanish that I highly recommend is the Foster training manual on Open Science, there are other resources, but this one is very easy to understand, it is very interesting and it is for educators who want to disseminate the concepts of open science. Undoubtedly, a key aspect that we must take into account is the knowledge about what open science is in order to really be able to intervene in an essential way, work together to be able to contribute, so to speak, to an open infrastructure in science and technology that truly allows for an open science which benefits the whole society.

Slide 37: I would like to share some principles and recommendations with you that go beyond open science, although they include it, I mean the "Principles on access to information in times of health emergencies" produced by Alianza Regional. The principles compiled in this document begin with ensuring the right of access to information, including access to information for vulnerable communities. Finally on the right you can see the even broader framework represented by the highly relevant "Principles of sustainable development" and although they are very broad they should absolutely be taken into account.

Slide 38: I would like to end this talk by highlighting the benefits of open science, at least some of them: open science spreads knowledge, accelerates innovation, increases visibility and certainly impact, and in this aspect there are many works that demonstrate this, it clearly enables access and by its own nature, it is collaborative, equitable, gives back to society and it is even economically convenient.

Slides 39 y 40: Links to worldwide and Pan-American websites with health information.

Thank you all! Feel free to submit questions and provide feedback regarding this presentation, which you can access at the SEDICI repository: http://sedici.unlp.edu.ar/handle/10915/97811