

Marie Farge
CNRS-INSMI et ENS-Paris

Multi-scale representation of scientific publishing
made for Carlos Moedas on 22 September 2016,
European Commission, Brussel

Explanation of the scheme I had made for *Carlos Moedas*, the *European commissioner for Research Innovation and Science*, during the meeting our *RISE expert group* had with him on *September 22, 2016* in Brussels. He was going to meet publishers at the *'Frankfurt Book Fair'* and asked us what he should tell them. During the interview I drew up this scheme to summarize in graphic form (with a multi-scale representation) some of the suggestions I had put to him. I had insisted that the peer-reviewed academic publishing system should no longer be controlled by commercial publishers, but should be protected as a *'knowledge commons'*, produced and evaluated by researchers. On the other hand, the development of a market for the popularization of research results should be a priority for commercial publishers, as citizens and businesses today have an ever-growing need for them. For example, the role of journals covering a wide range of research domains, such as *Nature* or *Science*, should be to popularize science, but no longer to be in charge of peer review of academic research, because the review of articles by these journals is under the responsibility of their employees and not of active researchers. This should no longer be acceptable, and the role of such multidisciplinary journals should be regarded as science journalism. Indeed, journals covering a wide range of disciplines should no longer be responsible for the peer review of research articles. In consequence research journals should belong to their editorial board which guarantees the quality of the peer-reviewing of the highly specialized articles submitted to them.

Description of the scheme 'Multi-scale representation of scientific publishing'

- Tier 1 (top, in blue)

Media for the popularization of science and technology
developed by publishers according to the model they want, since they are investing in it:

Publishers should develop their business at the interface between researchers and citizens (as *Nature*, *Science* and various general-interest magazines are already doing), because the needs are immense. Our society is increasingly built on technical tools based on recent discoveries from all fields of research. Unfortunately, science is not integrated into culture as it should be, which explains a great deal of the present resistance to scientific progress, and even outright opposition

to it. Today many political choices are directly or indirectly related to scientific research. In short, the lack of scientific literacy on the part of many politicians and citizens is problematic. The mission of scientific commercial publishers should be to develop new media for scientific culture made by professional science journalists but not more to own and be in charge of peer-reviewed research journals.

- Tier 2 (middle, in green)

Science and technology watch media developed by publishers, according to the model they want since they are investing in it:

Publishers should develop their business at the interface between researchers and companies. The needs of companies in this area are very great, as they are unable to pay for subscriptions to research journals at the prices demanded by publishers. Publishers should offer companies high-quality scientific monitoring, with well-written articles by editors employed by the publishers (as are the editors of Nature...). We need to develop professional scientific journalism aimed at companies, so that they can follow and understand the results produced by researchers. For example, fifteen years ago, the *CSTB (Centre Scientifique et Technique du Bâtiment)* invited me to talk to them about open access publishing at their annual doctoral students' day, and the CSTB's research director told me how beneficial it would be to open up research articles and research data, but also the data of public bodies such as the CSTB, as there is a wealth of innovations to be developed at this interface (he cited as an example the improvement of building insulation in France, where there is a cruel lack of data to define standards).

- Tier 3 (bottom, in red)

Production, evaluation and dissemination of academic publications (articles, codes, data, courses, ...) under the responsibility of researchers, according to a model of public funding and ownership:

Editing, dissemination and electronic archiving of articles should be done through platforms, where researchers would deposit their articles, to be read and evaluated by the community of their peers. These platforms should be public and developed as open source software, so that everyone can benefit from them, but no one can take control of them. Articles, data, software and courses produced by researchers and financed by public funds should by default be freely available to all. Scientific knowledge should be recognized and protected as a cultural commons, as proposed by *Elinor Ostrom*, 2009 Nobel prize in economic sciences, in her book '*Understanding knowledge as a Commons*' (MIT Press, 2006).

Suggestions:

- Publishers should be prevented from manipulating peer-reviewing, and the academic journals they own should be bought out or replaced by new journals published with the '*Diamond Open Access*' model. Research articles are too specialized and too essential to scientific progress to leave their evaluation and dissemination under the control of commercial publishers, who should be prevented from manipulating peer-reviewing using IA and patenting it (e.g., the patent granted to *Elsevier* on August 30, 2016 for '*Online peer-review*'). Moreover peer-reviewed journals should not be recognized as such when peer-reviewing is under the responsibility of employees of the publisher (who are called '*editors in residence*'), because only active researchers specialist of the domain of the journal are peers. Today '*editors in residence*' are in charge of many journals covering a wide range of disciplines (e.g., *Nature*, *Science*, *Physical Review Letters*).

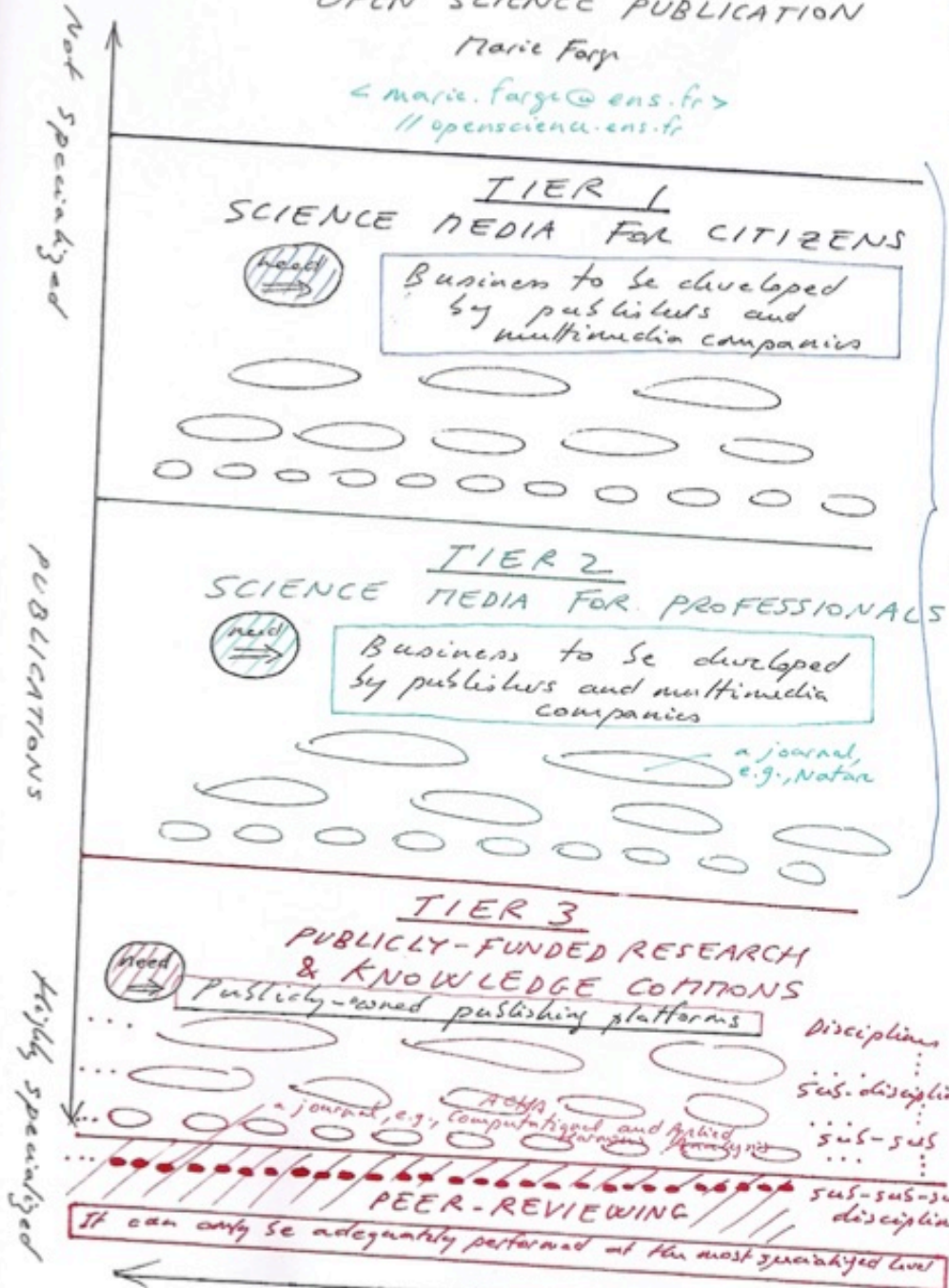
- To ensure a smooth transition to Open Access, researchers need publishing platforms (public and developed in open source) to which they can submit their articles for peer review and, if accepted, they are put online with appropriate metadata and archived permanently, all without researchers paying, as this is a public research infrastructure (on the model of the allocation of free computing hours made in high-performance computing infrastructures, such as the European *PRACE* network <https://prace-ri.eu/>). To benefit from this service, research journals must apply, and are only accepted if the reputation and evaluation work of their editorial committee is recognized as being of sufficient quality and usefulness by the scientific committee of the publishing platform. Such platforms can also be used to test new publishing models, such as the '*Diamond Open Access*' where journals are owned by the peer review editorial board rather than by the publisher (cf. in France <https://www.centre-mersenne.org/en/> and <https://www.episciences.org/en/>).

- Publishers should be asked to invest in the development of new media to explain the new results obtained by researchers to companies and the general public. There is a very promising business to be developed (which will create jobs, in particular for specialized journalists) to disseminate research results and meet scientific information needs that are little or poorly satisfied today. Small and medium-sized businesses, and especially start-ups, suffer the most from this lack, as subscriptions to academic journals are far too expensive for them, and research articles need to be presented to them in a simpler way, with explanations adapted to their level of knowledge.

MULTISCALE REPRESENTATION OF OPEN SCIENCE PUBLICATION

Marie Farge

<marie.farge@ens.fr>
// openscience.ens.fr



Non peer-reviewed publications to translate the results of research to companies and citizens, under the responsibility of the market, as computer scientists. The competition will be between researchers members of editorial boards for accessing for free to the platforms.

Peer-reviewing publishing firms under the responsibility of researchers who will develop new practices using peer-reviewing platforms, e.g., open peer-reviewing.

DISCIPLINES Less objective

Publicly-owned peer-reviewing + publishing + archiving platforms, linked together, interoperable, developed in open source software, managed on the model of computer centers, to which private companies provide services without owning the infrastructure.