

Speaking of Paradigms: The Open Access Model and Developing Countries

Priscila FM Lopes*

Department of Ecology, Federal University of Rio Grande do Norte, Brazil

In its most accepted definition, scientific paradigms are “universally recognized scientific achievements that, for a time, provide model problems and solutions for a community of practitioners.” [1]. A major feature of paradigms is that they are not fixed, and instead, they face shifts, which implies changing methods, goals, and the patterns of research. Once these paradigms change, one cannot go back to old methods and beliefs.

Such shifts are what move knowledge forward, and are a natural outcome of science, although they are by no means easy. Many of these paradigm shifts are specific to disciplines and remain within their limits. For example, we can cite the cancer stem cell hypothesis that brings the need to develop new cancer therapies [2], or the ecosystem-based fisheries management that I intend to approach in this session in the future. This last one specifically dismisses the chance of success for fisheries management based on single species or stocks [3].

However, at least one of these paradigm shifts, although not scientific per se, seems to affect multiple, perhaps all, disciplines, and can indeed affect the motor of science: the search for new models of scientific communication. The establishment of scientific communication in most countries (and not only the developed nations of each period) has, in the last 60 years or so, been based on the use of printed journals and more recently online journals. Such journals, if aiming to be recognized, need to be indexed in databases that attest their relevance, based mostly on impact factor, which measures their citation, and hence, their pervasiveness. This impact factor based model is not immune from criticism or from corruption [4].

Although valid for many decades, the peer review model funded by university paid subscription fees may be facing a paradigm shift, brought about by the onset of the open-access journals [5]. Part of this is due to the exclusivist role of the old model, as even journals that do not charge authors for their publications, sometimes charge exorbitant amounts for their subscription. These values can be unaffordable for some developing countries, where research is not usually a high priority [6]. Without such subscriptions, one cannot access published research. Nowadays this may not be a huge obstacle for academicians, as researchers usually collaborate among themselves, exchanging and divulging each other's work. Of course, we still have to deal with the frustration of finding “the paper” and being unable to access it instantaneously. If our colleague is busy or away and takes a few days to get back to us with a reprint, most often we will have lost interest in it altogether.

I can still imagine, however, in pre-email and Facebook times (yes, many of us request papers to colleagues abroad through social networks!), how scientists from the research invested Northern institutions and the research poor Southern institutions were mostly unaware of each other's work [7]. Today, at least we can all follow what is happening in the mainstream north-based journals, even if sometimes it is only through their abstracts. On the other hand, the developments in the local journals, mostly not indexed by ISI's Science Citation Index, are probably a big incognita for the topnotch researchers [8], which could be partially solved by the open access initiative [9].

An open access paper, as its name says, can be accessed by anyone from anywhere for free, representing a promising way to return knowledge to society, especially when such knowledge was acquired through publicly funded research. For example, medical practitioners in a hospital with no funding for journal subscription (probably the case for most health institutions in developing countries) could also access the most recent developments in their fields, and put such knowledge into practice. Yet, for social and anthropological studies, this would represent a way of making findings accessible to the subjects studied [10]. Hence, the open access model comes to the stage with grand objectives, such as making science accessible for all and closing knowledge gaps [9]. Also, this could be a unique chance for journals based in developing countries to reach a wider audience, and hopefully even a chance to overcome the prejudice against submissions from the developing world [7].

The novelty here breaks the old paradigm of scientific publication, but as any paradigm shift, it is still under development and in need of improvements. For example, it is up to all researchers and editors to propose models based on rigorous and independent evaluation of research quality (see Smith 2006 for some alternatives) [11]. It is crucial to find ways to prevent the potential for opportunism of counterfeit initiatives that may leave a dark stain on such a promising endeavor [12,13]. Also, the open access initiative should be inclusive not only regarding information access, but also publishing access. The exorbitant subscription fees must not be translated into exorbitant publishing fees.

A major challenge for the new open-access paradigm will be to find ways to financially maintain itself. In addition, a truly open access model would need to assure free scientific communication, without limiting the access of researchers working in funding limited institutions to publish their work. It might take some time and joint collaboration between the south and the north world, but the funding agencies of the former will eventually feel the pressure to find and negotiate ways for their researchers to publish open access.

If publishing is not affordable to individual researchers, this paradigm shift will create just another exclusive club for the ones who can afford to pay thousands of dollars to make their studies read by a higher number of people. If so, this might be a situation where the scientific solidarity among researchers will not be enough. One thing is to exchange or download a paper for a colleague, but to share the financial burden of a publication is a completely different thing. It is up

*Corresponding author: Priscila F. M. Lopes, Department of Ecology, UFRN, Natal, Rio Grande do Norte, Brazil, 59078-900; Tel: 55-84-3215-3441; E-mail: priscila@cb.ufrn.br; pmaccord@gmail.com

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to all of us - researchers, managers, practitioners, and funding agencies - to make this transition in a way that we would be not robbing Peter to pay Paul.

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