Why is Open Access important

OK, so now you're probably wondering why we just taught you about a fascinating colour scheme that people have made for research articles. Why should you care, or why is any of this important to you?

Imagine someone in your family falls ill with a particular disease. You want to learn more about it, so you can understand it more. So, you turn to the scientific record. However, every research article which you want to read, which might offer you some comfort or understanding, is inaccessible. Time and time again, you encounter the paywall. Before even getting to look inside the article to see if it is useful, you are faced with a $35-40 price tag.

Imagine if you are a policymaker or high level decision-maker, looking to learn more about the impacts of climate change. But every paper you want to read on how it might affect your constituents is paywalled.

This is how the present scholarly publishing system works. Great for those who can afford it, terrible for those who cannot. Most people on this planet cannot afford it.

If we believe that science can help us to save the major problems that we as a society face, including climate change, global health, and resource security, this status is unacceptable and affects us all.

What is the ethical basis for Open Access?

One of the core arguments for public access to the scholarly literature is that most of the research is paid for by taxpayers through government grants and basic public funding. That's right, if you pay taxes, a little bit of that each year goes towards paying researchers to do their job. Therefore, it seems just that the public should have a fundamental right to access the results of what they have funded.

With OA, every single person in the world can read articles, providing they have an internet connection, and not just those whose library can afford to subscribe to journals. Faster and more widespread discoveries benefit everyone. High school and college students can gain the information literacy skills they need and are critical for the knowledge age. Patients clearly benefit when their doctor and other health care professionals have access to the latest research.

[Insert that Gould quote here]

Barriers that prevent access to scholarly literature and data is a global problem, and it particularly affects developing nations, as well as those in less well-funded research institutes. If costs of getting access to scholarly outputs are too high for researchers and the public in the developed world, just imagine how this affects those in Africa, South America, and parts of Asia.

Many countries, institutions and individuals simply can not afford to subscribe to access the scholarly literature. In fact, no single one can afford it. And while the HINARI program helps with access to some health research, such initiatives clearly acknowledge the unethical basis for the present system - knowledge discrimination based on financial or geographic privilege, which many of those in parts Europe, North America, and other more-developed nations might not even be aware of, because they indirectly profit from their wealthy institution's access to a given set of journals that they can use via their institutional affiliation.

Some times, in order to recognise your privilege, you have to have it first taken away.

The societal, economic, and academic impacts of OA

Many years ago, in the pre-MOOC era of 2016, several of the now Steering Committee members wrote long, long, research paper about the positive impacts of OA. We found the case to be quite overwhelming, in particular the social case for OA is strong for advancing citizen engagement, and leveling the playing field for researchers in developing countries.

Recently, Fell, 2019 looked at the economic impacts of open science, finding:

> There is indicative evidence that OA to findings/data can lead to savings in access costs, labour costs and transaction costs. There are examples of open science enabling new products, services,

companies, research and collaborations. Modelling studies suggest higher returns to Research and Devlopment if OA permits greater accessibility and efficiency of use of findings.

In 2017, the World Bank released a blog post about the importance of OA for development. This post actually provides a really cool overview of some of the critical evidence supporting the importance of OA:

- Because OA articles are more visible, they receive anywhere from 25%-250% more citations compared to Non-OA (NOA) articles in the same journal and year (Houghton and Sheehan, 2009).
- Open Access enhances and accelerates the research cycle - where work is published, read, cited and then built upon by other researchers (Kuri, 2014).
- By facilitating additional use, OA leads to substantial, measurable, positive returns on investment - in one instance amounting to between £58 million and £230 million over 30 years (net present value) (Beagrie & Houghton, 2014).
- OA enables small- and medium-sized enterprises (SMEs) to accelerate commercialization, innovation and discovery, also helping to overcome their limitations in paying for journal subscriptions and otherwise-restrictive licensing, which usually makes it harder to facilitate re-use (Mazzucato, 2011).
- OA maximizes prosperity effects. In the Netherlands, a 60% price reduction in public-sector spatial data spending has been estimated to lead to a 40% annual growth in turnover, as well as an increase in employment of + ~800 jobs. (Pluijmers, 2002).
- A report by the Computer and Communications Industry Association identifies a value of $4.7 trillion, and $2.2 trillion in value added to US economy from fair use exceptions to copyright law. It employed more than 17 million people and supported a payroll of $1.2 trillion in 2007. Fair use companies generated $281 billion in exports the same year (Rogers, Szamosszegi, Capital Trade, 2010).
- Economic modelling shows that nations could benefit from substantial savings that would result from a switch to Open Access at both national and institutional levels: £400 million a year for the UK, and £500,000 to £600,000 per annum for a typical UK university (Houghton, Rasmussen and Sheehan et al, 2009; Swan, 2010).
- An increase of 1% to 10% in OA would translate into a recurring annual gain on the rate of return on R&D of 25% to 75% for all OECD countries (Houghton and Sheehan, 2006).
- The Human Genome Project, which is based on the Bermuda OA Principles, has led to advancements in the development of personalized medicine, and generated $141 in economic activity for every $1 invested by the US government in the project. The total related economic activity amounted to $796 billion between 1988 and 2010 (Wilson and Nicholls, 2015; Tripp and Grueber, 2011).

Further reading