

## 28 Drawing an Accessible Future for New Generations

Michael Nones

Thinking of the benefits of open science and sharing of research data, two main thoughts arise to me: on the one side, my newborn; on the other side, the country that I left to continue my studies. Probably the former is worse, since in Italy, as in other countries, there is a growing mass movement of no-vax, which bases its “knowledge” on reading news on the internet, without taking care of the source. As any researcher knows, vaccines are necessary to protect society as a whole, especially the new generations, and therefore, despite very few cases of vax-related issues, it makes no sense to be against vaccination based on a mere belief it can hurt. In my mind, free access to better science and sharing of research outcomes could be a boost in changing the minds of people who usually do not read scientific articles and reports (provided they are able to understand them, which is an issue I do not want to discuss further here). Given the wider spread of the internet, open research and sharing of data by means of different media mean the improvement for all parties, regardless of their instruction level and background.

As for my baby, he has just turned eleven months and grows day by day full of enthusiasm and surprise. For the future, I would like to see him, and all the other babies around the world, gain new knowledge based on the most up-to-date discoveries. At the present stage, however, the diffusion of science is uneven, since paying access to articles and data affects their availability and dissemination, preventing the opportunity for low-income countries or specific parties in obtaining new information and potentially contributing to the improvement of the subject.

Among open data issues, I think the availability of good as well as bad results (especially bad unpublished) would help deepen understanding of processes and address lack of information. In science every attempt is worth doing, provided the validity and significance of the assumptions on which it is based. Therefore, having a database of fails, in most disciplines, with some metadata describing the main possible reasons for the occurred problems, would be a great benefit to avoid similar failing results and boost the overall productivity (because science is slowly becoming like an industry, in all its fields, with information only rarely travelling the globe and addressing the right parties).

Moreover, cutting-edge research needs funding, and it makes very little sense to concentrate most of it in literature review rather than in doing science. Especially

in countries where few public funds are available (e.g., in Europe, Spain and again Italy), and private companies do not (yet) effectively support science-related research, having free access to state-of-the-art research would enhance good quality research, allowing an effective investment of the available funds.

Open science also means to broaden the view to a world that can be explained in detail, which is scary only if people do not want explanations but prefer to believe their own thoughts (as in the no-vax issue already mentioned). If you had some history classes: In the Middle Ages there was closed access to knowledge, and the permitted and available knowledge was cloistered and scrutinised. The tendency to base every aspect of life on belief and the fear to act differently from what was thought correct was the leading view. Through science, Middle Ages Europe evolved; the first universities were founded and a re-birth period (the Renaissance) started, boosting movement of people around Europe. If we want to stop that, then closed access is the right way. The media have to simplify things to make information mass-explicit, but comprehension comes not from summaries, but rather from combining important self-organised concepts from different sources, which should be freely available for interested parties.

Lastly, to return to my child's future, it is unbelievable how much a little human being learns by doing, and by watching others doing. At a certain point his own abilities are not sufficient to keep on track if he is not provided with an effective support. "Surfing the web" will be much easier for our children than it has been for us, and making sense of the huge amount of information available is not always easy. We have learned with books and encyclopedias that they will use the web. How to filter good and reliable information from bad sources, especially on science, if most of it is just enclosed in academia?

A growing movement towards open research and free sharing of data and research outcomes can contribute to overcome such issues. But a real change in the university system and researchers' minds is necessary, since presently academics are more focused on their own world, keeping results private to push their publications and increase the h-index. More collaborative methods and sharing of data among all possible interested parties is the only key to increase our knowledge, and guarantee a better world for our children.



© 2018 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).