OPEN SCIENCE: Where are we? How did we get here? Where to we go from here?
Maryrose Franko, PhD
Executive Director, Health Research Alliance
May 2017

“An old tradition and a new technology have converged to make possible an unprecedented good.”

Thus begins the document resulting from the [Budapest Open Access Initiative](#), arguably the start of the Open Science Movement as we know it today. The BOAI was the culmination of sixteen passionate participants meeting in Budapest in 2001, and then virtually continuing their vigorous analysis of the dysfunctional aspects of scientific communication. In February 14, 2002 the BOAI document was published and what was then the “Open Access” movement began.

It’s been fifteen years since the call to provide open access to publications, which in 2017 means to provide “free, immediate, online availability of research articles coupled with the rights to use these articles fully in the digital environment”, according to [SPARC](#). Let’s take stock of how far we have come in those 15 years.

For one, the demand for open access to publications has evolved into the demand for open access to many other research outputs such as research data and materials. Collectively, this is called “Open Science.” Scientists have always enthusiastically shared the fruits of their research without payment for the sake of accelerating scientific progress – the “*old tradition*” referred to by the BOAI. Digital technology now allows for an open system of communicating these research results with anyone anywhere in (almost) real time - the “*unprecedented good*” the BOAI authors envisioned. Open Science helps foster an environment where research can flourish - pushing innovation, improving health, and solving global problems.

Yes, the vision has expanded over 15 years, but how far have we come in realizing that vision? The NIH was actually the US leader in requiring public access to NIH-funded research. The [NIH’s Public Access Policy](#) (implemented in 2009) requires investigators to submit manuscripts to the NLM’s PubMed Central, to be made publicly available no later than 12 months after the date of publication. It wasn’t until February 2013 that John Holdren (then Director of the Office of Science and Technology Policy under President Obama) issued a memo to the heads of all departments and agencies directing them to develop a plan to support increased public access of federally-funded research. In the ensuing 4 years, at least 21 agencies (accounting for more than 98% of federal R&D spending) have announced or implemented their plans. SPARC has created an [online resource](#) for tracking U.S. federal funder requirements for sharing research articles and research data. But note the 12-month embargo. How much more effectively could science and health be advanced if there was a requirement for immediate access to research results?

Funders in the UK seem to be ahead of funders in the US, as tracked by the [SHERPA/JULIET](#) service. JULIET is a database (funded by the [RLUK](#)) of research funders’ (including governmental) policies on open access to data and open access publishing. JULIET currently includes [110 funders worldwide](#), 14 of which are in the US, and only a handful of those are nonprofit funders.

This is definitely not a complete picture of the US landscape of open access policies, but the message is clear that only a small minority of US nonprofit funders have requirements for open access to publications and data. Why? One reason is that it is not yet clear to what infrastructure we should

direct our grantees to comply with open policies. Many of the funders who have implementing strict policies requiring open access to publications and/or to data have created their own infrastructure (including the NIH and the Gates Foundation), which is not an option for most nonprofit funders. The [Health Research Alliance](#) (a collaborative member organization of over 75 nonprofit biomedical research funders) has partnered with the NIH's NLM and [Figshare](#) to enable members' open science policies and allow our funded researchers to use this existing infrastructure to comply with those policies. Figshare and the Center for Open Science's [Open Science Framework](#) are 2 of several repositories recommended by [Nature's Scientific Data](#). Recognizing that completely open science is a laudable goal, but not all members can get there at the same time, HRA's Open Science Task Force is working to identify strategies all along the "open" spectrum, and help members implement those that best align with their missions.

A great resource for universities who want to implement open access policies is a guide is written and edited by Stuart Shieber (Professor of Computer Science and the Faculty Director of the Harvard Office for Scholarly Communication) and Peter Suber (Director of the Harvard Office for Scholarly Communication, Director of the Harvard Open Access Project, and Senior Researcher at the Berkman Klein Center for Internet & Society). This guide is called [Good practices for university open-access policies](#). Drs. Shieber and Suber developed this guide partly in response to the ten-year anniversary statement of the BOAI calling on supporters of open access to ""develop guidelines to universities and funding agencies considering OA policies, including recommended policy terms, best practices, and answers to frequently asked questions." This guide is a much appreciated resource for universities, and a companion guide for funders would be equally valuable.

Certainly the mission of nonprofit funders dictates that research resulting from our funding be freely accessed by our patients and families to help make informed decisions about care, and by our boards and donors to be able to evaluate the impact of our funding. But it is equally critical to our mission that *data* resulting from our support be published in a machine-readable form and available in easily accessible and open data formats to enable reuse by other researchers. In addition, as technology evolves the need and the ability to share to all research outputs must evolve with it. Only then can the impact of the research be multiplied - increasing the potential for significant and far-reaching advances and scientific innovation.

.....

Dr. Maryrose Franko has been the Executive Director of the Health Research Alliance for almost 2 years. Before coming to the HRA she ran the graduate and postdoctoral programs at the Howard Hughes Medical Institute for over 20 years. She was a founding member of the HRA Board of Directors, serving from 2006-2012. One of her goals for HRA is to empower funders to achieve the most open science policies possible, in alignment with their organizations' missions.