

## **A conversation with Cameron Neylon on 03/26/13**

### **Participants**

- Cameron Neylon — Advocacy Director, Public Library of Science (PLOS)
- Alexander Berger — GiveWell, Senior Research Analyst

**Note:** This set of notes was compiled by GiveWell and gives an overview of the major points made by Cameron Neylon.

### **Summary**

Cameron Neylon is the advocacy director at the Public Library of Science (PLOS), which is an open access scientific publisher. GiveWell spoke with Cameron Neylon as a part of our investigation of opportunities to improve the practice of biomedical research. The main subjects of discussion were advocacy work at PLOS, efforts to promote open access to scientific content, and ideas for making scientific outputs more useful to other scientists.

### **Public Library of Science (PLOS) advocacy efforts**

PLOS is an open access scientific publisher, and accordingly most of their efforts devoted to publishing, but their advocacy work involves thinking more broadly about how to improve scientific communication.

PLOS's advocacy goals include:

- Increasing open access to research outputs
- Ensuring that there are legal rights in place, so that research outputs can be reused for different research projects.
- Increasing the technical and human usability of communicated research, as well as the comprehensiveness of research communication.

The main targets of PLOS's advocacy efforts are:

1. Other advocates.(to offer them support)
2. The “early mainstream” of adopters, as well as early adopters and enthusiasts.
3. Policy makers for government, funders, and institutions.

### **Open Access**

#### **Official requirements of open access**

Most funders of biomedical research have official policies that require their grantees publish their research outputs publicly, but compliance with these policies is low. So official requirements alone aren't very effective. There needs to be more monitoring of compliance with funder requirements.

Despite this, funder requirements do contribute to cultural norms of open access.

### **The National Institutes of Health and PubMedCentral**

PubMedCentral is a free digital database of full-text scientific literature in biomedical and life sciences. The National Institutes of Health refers to researchers' papers in PubMedCentral when it evaluates grant proposals, and this incentivizes researchers to post their papers to PubMedCentral. This helps increase open access to research outputs.

### **The variability of the locus of control of open access**

The types of entities that are capable of getting researchers offer open access to their papers vary by location. In the United States, getting a large fraction of researchers to offer open access seems to require intervention by the White House or Congress. In the United Kingdom, entities such as the Wellcome Trust and the Howard Hughes Medical Institute (HMMI) are able to have a greater influence.

The University of Liege maintains an institutional repository for scientists to deposit their research outputs, and requires that its professors deposit their research outputs there. Almost all professors comply with this policy, because when the university does faculty evaluations, the university only considers the research outputs that are in compliance with the policy.

### **Increasing the usability of research**

Some people who are interested in biomedical research focus on improving the fraction of research that replicates. However, replicability is only one of several issues pertaining to *usability* of scientific research. Even if studies are replicable, they may be hard to use to do further research research. Replicability is necessary, but not sufficient, for a study to be useful to the scientific community. It's important that all aspects of the usability of scientific research be improved.

### **Increasing granularity of research, and peer review**

One way that scientific outputs could be made more usable is to split them into pieces, which can be evaluated on their own merits. An advantage of increased granularity of research outputs is that often papers that are rejected from journals have some useful components, and if the components were evaluated individually,

the useful components would not be suppressed by the traditional publication system.

Increasing the granularity of research outputs would increase the burden of peer review, and so there's a fine balance that needs to be struck between the burden of peer review and granularity of research outputs. One way that the burden of peer review could be reduced is by automating certain parts of peer review, for example, by automating the work of checking to see whether a data set is internally consistent. There is a need for more research on which parts of peer review it would be best to automate.

### **Standardized formats for scientific outputs**

If researchers were to use the same formats as one another when they report their research, it would make it much easier for other researchers to understand and use each others' research.

### **Other Issues**

#### **The need for broader metrics of the quality of research.**

Researchers are currently rewarded primarily for publications in prestigious journals.. It would be better for the scientific community if there were more emphasis on scientific outputs' relevance, influence, and usability. This would increase the diversity of scientific outputs, which would create a more robust scientific process

Some people are starting to measure the quality of a research output by the number of citations that it has. The number of citations is a measure of how much research is used, even if a crude one. Other people who are trying to improve science are interested in the possibility of measuring the usage of a paper by the number of online page views that it receives, or other related metrics. These "altmetrics" accumulate much faster than citations.

#### **The relative prospects for increasing open access vs. improving usability in other ways**

The consensus of the scientific community is that there should be open access to research outputs. By way of contrast, the scientific community is generally attached to the traditional peer review. So at the moment, it seems easier to move in the direction of open access than it does to move in the direction of increasing usability by other means.

### **Lab notebooks**

Electronic lab notebooks are often less useful than pre-existing tools such as Microsoft Word and paper and pencil. They're not well suited to collecting data generated by instruments.

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