

A conversation with Ivan Oransky on 02/21/13

Participants

- Ivan Oransky — Co-founder, Retraction Watch
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Note: This set of notes was compiled by GiveWell and gives an overview of the major points made by Ivan Oransky.

Summary

Ivan Oransky and Adam Marcus coauthor a blog titled *Retraction Watch*, which aims to increase the transparency around retraction of academic papers. We spoke to Oransky as a part of our investigation of the cause of meta-research. Some subjects that Oransky discussed are:

- Reasons for papers being retracted, the frequency of retractions across fields, and Oransky and Marcus' interest in creating a retraction database
- Efforts to improve the availability of information about post-publication peer review
- Online repositories of preprints of academic papers
- Ways in which scientific research could be improved

Retractions of scientific papers

Literature on the relative proportion of honest mistakes and fraud

Grant Steen, Ferric Fang and Arturo Casadevall have studied the question of what the fraction of retractions of academic papers occur as a result of authors' misconduct.

They published a paper titled "Misconduct accounts for the majority of retracted scientific publications" in the *Proceedings of the National Academy of Sciences* in October 2012. The paper examined the biomedical and life science research articles which PubMed lists as having been retracted, and investigated the reasons why the papers had been retracted. They used Retraction Watch, other studies, and authors of research integrity reports as sources.

They found that at least 67.4% of the retractions had been due to misconduct or fraud. This was a surprising finding, because most retraction notifications don't hint that the cause was misconduct or fraud, as opposed to mere error.

Variation in the frequency of retractions across contexts

Anesthesiology has gotten a lot of attention for having retractions, because the field has the two researchers with the most retractions (~183 retractions and ~88-89 retractions respectively). Similarly, social psychology has some researchers with a very large number of retractions.

There's not enough information to know whether anesthesiology and social psychology genuinely have more problems of fraud or misconduct than other fields, so the few individual cases that have been found shouldn't be weighted heavily at the field level.

It's more reasonable to focus on individual labs that have many retractions, in order to investigate whether they engage in pervasive misconduct.

A retraction database

The repositories PubMed and Thomson Scientific have information about which papers have been retracted. However, their information is incomplete, because it comes from journal publishers, which often provide incomplete information. Ivan Oransky and Adam Marcus are interested in creating a more comprehensive database of retractions and corrections in the sciences, and would need some funding to do so.

Post-publication peer review

Ivan Oransky and Adam Marcus published a paper titled "Scientific publishing: The paper is not sacred" in *Nature* in December 2011, arguing that the scientific record should include post-publication responses to papers.

Currently, most online databases that store journal articles present the articles in isolation, without indications of whether the paper was subsequently corrected or retracted. This may be one reason why researchers sometimes cite retracted papers.

There is a service called CrossMark® which works to link journals articles with their post publication peer review. It communicates with publishers to obtain the most recent updates to articles and marks the articles with a "most recently updated" date. This facilitates easy access to information about whether an article has been corrected or retracted, and to correspondence about the article within the journal that it was published in.

In the long run, the service may include links to media coverage and blog posts about a given article.

Promoting reproducibility of scientific results

Some efforts that aim to increase the fraction of scientific research that is reproducible are:

- **The Reproducibility Project** — A large-scale collaboration to estimate the reproducibility of published psychological science. University of Virginia psychologist Brian Nosek coordinates this project.
- **The Reproducibility Initiative** — A project that aims to reward scientists for doing careful and reproducible work. It offers scientists an opportunity to earmark an article for independent validation, and guarantees the scientists who do so the option of publishing the replicated results in the *PLOS ONE* Reproducibility Collection. Dr. Elizabeth Iorns founded the Reproducibility Initiative.

Online preprint repositories

ArXiv is an online repository where researchers post preprints of papers in math, physics and other fields. It allows for greater access to the newest research.

Such resources are less likely to be used in the biological sciences than they are in math and physics, because in biological sciences, discoveries often have potential commercial value, and researchers are wary of posting their papers before they've been accepted for publication, because they may lose intellectual property rights if they do so.

Nevertheless, there is an online repository for research in biology and medicine called Faculty of 1000 Research, which some researchers have started using. (Faculty of 1000 started as a sort of recommendation engine for helping researchers learn which of the thousands of articles in their fields they needed to read.) PeerJ and their preprints service are also working on this issue, including open peer review. In view of the intellectual property rights issue, the repository is more likely to work well for basic life sciences research and for basic chemistry research than it is for applied biomedical research.

Other ways in which academia could be improved

Grant size and duration

Currently the most prestigious research labs get substantially larger grants than other labs do. Some have argued that it may be better for scientific research if

smaller grants are given to a larger number of labs. And others say it may also be better for scientific research if scientists received recurring grants for longer periods of time than they do now, so as to cut down on the pressure that they feel to get new grants.

The paucity of jobs in academia and industry

There is a general problem of the number of graduate students in the sciences being far greater than the number of jobs available in academia or industry. This should be communicated more clearly to graduate students, so that they are aware of their job prospects.

More efficient peer review

The peer review process is inefficient because if a paper is reviewed and rejected from a given journal, another reviewer must review it again if it is submitted to another journal. There is an organization called Rubriq that offers independent scientific review, which authors can pay to do a peer review, which can be used for several journals that the paper is submitted to, cutting down on the expected time to publication.

People for GiveWell to talk to

- Gilles Frydman: The creator created the Association of Cancer Online Resources (ACOR), which is a valuable online social network for cancer patients.
- Martin Fenner: A doctor and cancer researcher who is working on the PLOS Article Level Metrics project
- Jason Priem: A graduate student at University of North Carolina who is studying alternatives to the traditional measures of the impact of academic papers.