

PEER REVIEW [1]

Part of the main Quality Assurance system used in science is "peer review". Many readers will have heard scientists, and others such as journalists, use this term. It sounds impressive and is often referred to as the "gold standard" [2]. If science has been peer reviewed, then it has supposedly been thoroughly checked.

Unfortunately, this stretches the truth and is a good example of how the scientific professions have sought to confer unwarranted authority on their investigations.

The educated layman has been given the impression that peer review would entail perhaps a dozen other scientists appraising the work, poring over it for months, repeating experiments and checking analyses and calculations. It may be erroneously thought to be a substantial process worthy of the "gold standard" that scientists imply.

Professor Peter Doherty [3], an Australian winner of a Nobel prize in Medicine, has written in the following terms about peer review:

"It's not hard to get almost anything published at some level in what's broadly styled as the peer-reviewed scientific literature, especially if it is well written and gives the appearance of having been done properly."

Doherty is rightly very supportive of peer review as a first pass check of scientific evidence. But policymakers and journalists should take careful note of Doherty's observations:

"Peer review should also be seen for what it is, an agreement between the editors, reviewers and authors that the article is now fit for general consumption by a quality audience, not a validation of infallibility, a concept that doesn't exist in science anyway!"

What publication following peer review actually says about a piece of work is that, so far as anyone who has been asked to critique it can detect, what looks to be an interesting study has been done using appropriate techniques, and the data looks to be both valid and does support the conclusions that are reached.

Beyond that, the reviewers should ensure that the methods used have been presented with sufficient clarity so that the study can be repeated, or at least understood, by others."

Peer-reviewed publication is, in fact, just the first step in the validation of any important research finding. It is not an absolute. When done properly, the best evaluation that can be made without independent verification.

In reality, peer review is often just a quick read of the work, maybe for only a few hours, by a couple of anonymous people selected by an editor of a science journal. This review will make sure that the work is readable and will often pick up some problems. It almost always falls well short of a decent error checking system.

Peer reviewing works thus: a journal editor sends an email asking if you would

be able to review a paper. A summary of the paper is attached and a desired date for the review is specified. The reviewer is not paid but the inclination is to agree as a duty to the profession. There is also a more self-interested motive. You may submit a paper to the same journal sometime in the future. There, nevertheless, are benefits in staying in the good books of the editor so that you have a better chance of getting your work accepted.

Editors are increasingly having difficulty getting reviewers and are greatly appreciative when you agree to do the review. Nowadays they are often so desperate that they ask the original authors to nominate possible reviewers, and it is unsurprising that the authors will often nominate scientists with a similar viewpoint to their own.

The referee report is generally anonymous, that is, the original author may not know who the referee is. This has the perverse effect that if the paper ends up being wrong, nobody will know the identity of the reviewer who failed to detect the errors.

There is little responsibility on the reviewer so there is little incentive to do the job thoroughly. A major problem is that the reviewer is busy on other matters and wishes to complete the task as quickly as possible. There are doubtless conscientious reviewers, but the *prime facie* evidence is that peer reviewing is superficial.

It needs to be underlined that peer review will almost never include genuine replication of experiments, re analysis of data, reworking of calculations, or lengthy reappraisal of assumptions. It is a useful first pass check but hardly the quality assurance system that is to be expected to guide big government decisions worth billions of dollars.

To conclude, and to reiterate, the words of Horton (2000), editor of Medicine's most prestigious journal, *The Lancet*, are powerful:

“We know that the system of peer review is biased, unjust, unaccountable, incomplete, easily fixed, often insulting, usually ignorant, occasionally foolish, and frequently wrong.”

Notes:

1. This reading is a precis of what was written on the topic by Ridd, Peter, “*Reef Heresy*”, pages 166-169, Connor Court, Redland Bay QLD, 2020.
2. Mayden MSN, FNP, AOC Np-, K.D. (2012). Peer Review: Publication's Gold Standard. *Journal of the Advanced Practitioner in Oncology*, 3(2), pp. 117- 122.
3. Peter Doherty, “*The Knowledge Wars*”, Melbourne University Press, 2015, Appendix D.