

Anonymity in science

Neuroskeptic



The history of science is replete with important works that were originally published without the author's legal name being revealed. Most modern scientists will have worked anonymously in their capacity as peer reviewers. But why is anonymity so popular? And is it a valid approach? I argue that pseudonymity and anonymity, although not appropriate for all forms of scientific communication, have a vital role to play in academic discourse. They can facilitate the free expression of interpretations and ideas, and can help to ensure that suggestions and criticisms are evaluated dispassionately, regardless of their source.

I am a neuroscientist and, like all researchers, I publish academic papers in peer-reviewed journals. Since 2008, I have been writing about neuroscience and psychiatry on my blog, *Neuroskeptic* (<http://blogs.discovermagazine.com/neuroskeptic/>). I write my blog (and this piece) under a pseudonym. I am commonly asked why I choose to do this.

Anonymity has a long history in science and I believe that in many – although not all – cases it is a valuable tool.

In this article, for the sake of brevity, I use the term 'anonymity' to refer to both anonymous writings and pseudonymous ones. However, anonymous and pseudonymous authorship, although related, are distinct concepts. To be anonymous is to claim no name at all. A pseudonymous author, however, may adopt the same pseudonym (pen name) over an extended period, one that develops a reputation and identity of its own.

The name of Lewis Carroll, for instance, is renowned as the author of *Alice in Wonderland* and other classic works. No writer called 'Lewis Carroll' existed, however – it was a pseudonym adopted by Oxford mathematician Charles Dodgson. 'Carroll' ended up better known than Dodgson himself [1].

A brief history of anonymous scientists

Anonymity has been an important part of the history of science and many landmark publications originally appeared in this form. These include:

Nicolaus Copernicus, who first put forward his theory of heliocentrism anonymously, in the form of a manuscript now known as the *Commentariolus* (1514). Only later, after seeing that this work had been favourably received, did he publish a more detailed exposition of the heliocentric model under his own name [2].

From 1935, several mathematical textbooks appeared under the name of Nicolas Bourbaki, apparently a French

mathematician, who also contributed to mathematical theory in various ways. 'Bourbaki' was in fact a collective pseudonym for a group of young French mathematicians who shared common interests. The group was officially known as the 'Association of Collaborators of Nicolas Bourbaki' [3].

In 1908, English chemist William Sealy Gosset, then working at the Guinness brewery in Dublin, published a statistical result under the pseudonym of 'Student' [4]. This paper, 'The probable error of a mean', introduced a method for establishing the statistical significance of differences in means. Thus was *Student's t-test*, the basis of so much of modern science, born. It is still referred to by that name. Gosset was prevented from publishing this under his own name because the paper made use of certain proprietary Guinness company data [4].

Many other scientists and mathematicians have published some or all of their academic works under pen names (for an eclectic set of examples, see <http://mathoverflow.net/questions/45185/pseudonyms-of-famous-mathematicians>).

The pioneering computer scientist Donald Knuth once submitted a paper under the name 'Ursula N. Owens' (<http://www.math.upenn.edu/~wilf/website/dek.pdf>). Knuth did this because, he said, he wanted to ensure that the manuscript received a thorough critique. Reviewers had, by this point in Knuth's career, started to give his works favourable evaluations purely because they came from such a renowned 'name'.

Thus, science has through the centuries been built up by anonymous, as well as named contributions.

Scientific anonymity today

Today, anonymous writers are contributing to science in new ways.

Science Fraud (www.science-fraud.org) was an anonymous blog dedicated to the discussion of data falsification and manipulation in the scientific literature. 'Fraudster' highlighted numerous examples of seemingly manipulated images and Figures, mostly Western blots purporting to show data on protein composition. 'Fraudster' often acted on tip-offs from other anonymous sources.

However, the identity of the author, University of Rochester biologist Paul Brookes, was eventually revealed, following legal action brought by some of the researchers whose work came under scrutiny [5]. Shortly afterwards, Brookes deleted the content of the blog.

Not long after the closure of *Science Fraud*, however, a paper by the first scientist to send Brookes a cease-and-desist letter, Rui Curi, was retracted [6]. Another was

corrected – to address just those image irregularities originally noted by Brookes [7].

By exposing misconduct, Brookes, and other investigators like him, do science a great service. Though anonymous, they contribute more to the advancement of knowledge than those who publish false data under their own names.

Anonymity and objectivity?

Perhaps the most common form of academic anonymity today is that involved in the peer review process. Most modern scientists will have worked anonymously in their capacity as peer reviewers on manuscripts.

But anonymous peer review has proven controversial [8]. So, when is anonymity appropriate? And can it be dangerous?

The motivation for concealing the identity of peer referees is that it allows them to make their judgements freely, without having to fear the personal or social consequences of criticizing a colleague's work. Referees whose names were known, it is argued [8], would be unable to perform their duties effectively.

However, anonymous peer reviewers have been criticized as lacking accountability. For example, as Harry Morrow Brown put it ([9], p. 824):

Peer review may be necessary, but it is open to bias and abuse, especially when referees are anonymous. To shelter under a cloak of anonymity is cowardly, and it is surprising that many eminent journals still permit this practice...

Discussion is the breath of life to research, but the manner in which anonymous 'experts' sometimes express their opinions could permanently discourage young researchers with real potential, especially as vicious and hurtful comments have to be endured without the opportunity to obtain an explanation.

There are two distinct facets to the role of a reviewer, however. Referees are, firstly, asked to comment on the work in question and to express these opinions to the authors and editors. Secondly, reviewers are empowered to make formal recommendations as to the fate of the manuscript.

This dual role gives rise to a tension between the desirability of 'consequence-free' expression of opinion and the dangers of 'consequence-free' power.

In the case of an anonymous writer (such as Paul Brookes of *Science Fraud*), however, this tension does not arise. Unlike a peer reviewer, a writer has no power, except insofar as her arguments are able to persuade her audience.

A second issue in the debate over peer review is whether the identity of the authors should be provided to the

referees [10]. As discussed previously, Donald Knuth felt that, as a well-known figure, the only way to obtain an objective evaluation of his contributions was to separate them from his persona.

Indeed, outside of peer review, a virtue of anonymous contributions is that they are more likely to be judged fairly. An argument ought to be evaluated purely on the strength of its merits. However, it can be difficult for readers to do this when the name of the author is known: their reputation, personality, and other characteristics also enter the equation.

An anonymous argument, by contrast, can only be evaluated objectively.

When is anonymity appropriate?

Anonymity would not be appropriate for all kinds of scientific publications.

In the case of reports containing original data, there are good reasons why these ought to be published under a legally accepted name. Observations are credible only to the extent that they can be traced to an experimental centre known to be capable of collecting valid data.

Furthermore, the threat of consequences from data fabrication is an important check against scientific fraud; for this to be effective, original results cannot be published anonymously.

However, there is a distinction between data and interpretations (which includes criticisms). To evaluate data, it is necessary to know the source, but if an argument is valid, it is valid whoever makes it.

References

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