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# Seven sins in publishing (but who's counting...)

'Oh what a tangled web we weave, When first we practise to deceive.' Sir Walter Scott (Marmion, 1808)

Think of scientific misconduct in the UK and Malcolm Pearce - one of the most high-profile cases - comes immediately to mind. Malcolm Pearce was an assistant editor of the British Journal of Obstetrics and Gynaecology, and a senior lecturer at St George's Medical School, when two fraudulent papers were published in the journal. A whistleblower at the hospital was the catalyst for an investigation that led to Pearce being fired, found guilty of serious professional misconduct by the General Medical Council, and struck off. The professor of the department, Geoffrey Chamberlain, who was also President of the Royal College of Obstetricians and Gynaecologists and Editor of the journal, resigned from both positions as he was named as an author on one of the fraudulent papers. He reportedly did not know that his name was on the manuscript and, in his defence, it was not unusual at the time for Heads of Department to have 'gift' authorship on the department's publications, despite not making any contribution. Regardless, both were disgraced.

Scientific misconduct has many faces and its true prevalence is unknown, although many agree that it is increasing. Is it

Since 2010 an individual (or perhaps even a group) whose gender, identity and occupation are unknown, but who operate under the name 'Clare Francis', has upped the ante and flagged hundreds of suspected cases of potential fraud across the globe. Notorious among journal editors as a relentless whistleblower and crusader against text and image fraud, some of Francis' tips have resulted in corrections and retractions. For example, a 2006 paper in the *Journal of Cell Biology* was retracted after Francis raised concerns years after publication about image manipulation, which were validated by the

But why does it happen? Why not? Researchers are human and subject to the same frailties as in other walks of life. If a measure of a good academic is solely the number of articles they have published, then - when quantity is rewarded over quality - scientific misconduct may reveal a glimpse of the pressure researchers are under

It is worth remembering that, despite the stress of the 'publish or perish' culture, scientific misconduct is unacceptable in any guise and likely to be discovered, with embarrassing if not downright career- and reputation-destroying consequences. Good publishing etiquette is ultimately down to the integrity and moral sensibilities of researchers and authors

In this excellent article about some of the 'sins' of publishing, Philippa Benson, who has kindly written for this series before, provides a thought-provoking insight into scientific misconduct.

JYOTI SHAH Commissioning Editor

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It is important to start by acknowledging that *everyone* in the publishing game can behave unethically. Absolutely everyone involved in the 'knowledge cycle' in publishing (Fig 1) – editors, publishers, funders, academic departments, institutions and authors – can and, more often than we would like to admit, does the wrong thing.

Consequently, each of us should be mindful of the potential for breaches in ethical practice when doing the work we do. We should all strive to function within the bounds of community-defined standards, which reflect the goal of scientific community to create empirically sound and reproducible studies. For more about ethical standards and practice in science and publishing, see the websites of the Committee on Publication Ethics (COPE), research done over the past 20 years by participants in the International Congress on Peer Review and Biomedical Publication, and Retraction Watch, which is a website created to add transparency and increase accountability of all those involved in STM publishing.

It is also important to acknowledge that many researchers do 'do the right thing'. When ethical researchers recognise that they have made errors in judgment or practice, they take ownership of their errors and agree or ask that their publications be corrected or, if necessary, retracted. There are many examples of good behaviour, such as the authors of a paper that wrongly concluded that pilots had a greater-than-expected risk of developing prostate cancer. After reviewing published critiques of their work, the authors asked that their

paper be retracted. The first author wrote a true *mea culpa*, stating: 'This mistake was made because of my inexperience with the subject matter.' Such conduct should be standard practice, but is often not.

The 'sins' below are defined with loose boundaries and acknowledge in their order that some sins are more damning than others. Mortal sins in scientific publishing will put a hard and fast end to a career and venial sins will give you a black mark with publishers, but will not put an end to your professional life. Please take these descriptions more as food for thought than the absolutes of dogmatic ideas of 'sin'.

### Sin 1: Lying in the form of fabricating data or complete papers

Examples of explicit fabrication of data abound, with one study reporting that almost 2% of researchers are willing to admit to having fabricated, falsified, or modified data at least once.<sup>2</sup> It is likely that there are many more who are not willing to own up to misconduct. Some examples of data fabrication are shocking, such as the well-known case of Dong Pyou Han, the Iowa State University researcher who falsified data in HIV vaccine trials.<sup>5</sup> This case is dramatic because it affected so many, wasted millions of dollars, sent researchers down long roads of misdirected studies, and sullied the reputation of Han's university and colleagues. Han has since been sent to prison and fined

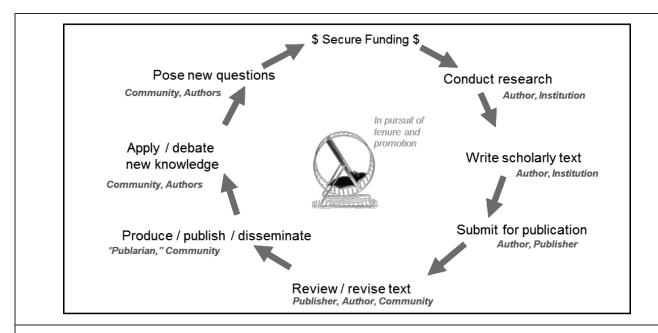


Figure 1 Knowledge cycle in publishing shows the writers and readers of documents that must be produced for science to be conducted, evaluated, and built upon. Every role in publishing can behave unethically in pursuit of tenure and promotion. (©PJ Benson)

7.2 million USD. In the course of investigations, Han admitted that his deception had started much earlier, when he acted to cover up a sample mix-up he had made years before.

Other cases are serious but also absurd like the publication of computer-generated papers, untouched by a human hand. Fabrication of data is one of the worst possible sins in publishing because it belittles the work of the majority of researchers who have dedicated their careers to finding verifiable explanations of how our world, our bodies and our minds really work. Perhaps even worse, data fabrication gives fodder to those who distrust science and scientists.

The scientific community takes such misconduct very seriously. When an editor discovers this problem, the author will be notified. The academic institution where author works will also more than likely be notified, and it will have procedures to deal with such allegations. At the very least, the manuscript will be rejected – but this may be the least of the author's worries.

**Bottom line:** Do not ever fabricate data of any kind at any level, and if you screw up, admit it and fix it.

### Sin 2: Cheating with data

This is usually in the form of using data selectively or choosing statistical methods that mask weaknesses in the findings. Cheating by using data selectively - sins of omission - or using statistics to spin the data to support your conclusions is different from outright fabricating data, but is no less a sin and can have equally dire consequences. Consider, for example, the implications of the *Lancet* paper that linked autism to the MMR vaccine for measles, mumps and rubella.<sup>4</sup> This paper was retracted in 2010, after evidence was uncovered that senior author Andrew Wakefield had manipulated data and breached several other ethical codes of conduct. However, the far-ranging and long-lasting damage, which included undermining public confidence in vaccines, could not be undone by a simple retraction. After the Lancet article, MMR vaccination rates fell sharply, and this decline has been tied to a rise in cases of measles, mumps and rubella, which can have lifelong consequences for affected children.

**Bottom line:** Do not ever alter data in any way. Accept the data yielded by the experiments you have done, do your best to publish them, and if you are in search of other results, design a different study.

## Sin 3: Overblowing outcomes (otherwise known as ego)

How ambition skews judgement in science is an enormous topic and yet, on a certain level, so simple: researchers believe that their work is more important than it is. One driver of this illusion is that people spend so much time studying one small component of a problem that the component – and its role in the solution to the problem – fills

their field of view. It becomes the forest *and* the trees; the whole puzzle instead of just one piece.

The research becomes the *raison d'être* for the researcher and, although important, takes on more meaning than perhaps it really has in the larger context. This myopia becomes insidious because it is tied to the sin of publishers who have turned 'incremental' into a dirty word. Researchers claim that their work is incremental (unless they are satisfied with publishing in PLOS One) because, in order to get published in a prestigious journal (or at least one that will count as such in tenure or promotion), one must portray one's work as 'important', 'critical' or 'significant' in some way. The more accolades of one's own findings, the better.

If the effect of this sin is to mislead readers, then this is a lesser but still impactful form of scientific misconduct. The result of hyping up the implications of a study can lead to sending a paper to the wrong-level journal, which in turn can mislead readers and waste the time of editors and, usually, reviewers. Often, the exaggeration is uncovered; most high-impact journals send out the majority of their rejection letters telling authors that their work is more appropriate for a 'specialised' journal, whose readers may be interested in the small, important but incremental advances.

**Bottom line:** Present your results accurately, interpret them objectively and be realistic about the significance of your findings.

### Sin 4: Hogging authorship

Authorship disputes are common and the practice of offering authorship to individuals who have not made a substantial contribution to the manuscript is called 'honorary' or 'gift' authorship. Conversely, an even more prevalent sin regarding authorship is when lead researchers do not give credit to others. A laboratory chief, or someone with authority, puts themselves as first author (or last) when in fact they had little to do with the work being presented. Having authority in the workplace allows one the power to take credit where credit is not due. But doing so is one of the most common sins in publishing. It takes a brave junior author to take claim of work that s/he has done in the face of a hogging supervisor. Another example of inappropriate credit is when the manuscript is actually written by a 'ghost' writer, whose identity is unknown. Authors, particularly those who are non-native speakers of English, need to wholly avoid the temptation of letting another pen their prose.

The consequences of authorship disputes range from personal acrimony to formal complaints made to institutions and editors. In such circumstances, an editor may reject a manuscript or publish a correction. Although it is risky for junior authors to call out an author ego hog, they can use the author contribution forms required by many journals as a litmus test because all authors have to state explicitly what their contributions to the work have been.

**Bottom line:** Throughout your career, work to give credit where credit is due, particularly when you become the boss.

### Sin 5: Writing for self (also known as the sin of sloth)

A sin of sloth is when researchers, as writers, assume that readers already understand the nature of the problem that they are addressing. The work is presented in a way that the authors, or other experts in their field, may understand – but not others. This sort of laziness, in which readers are not taken into primary consideration, is manifest not only in the rhetorical descriptions of the problems being addressed, but is also just bad writing. Tangles of convoluted sentences that require editors and reviewers to waste huge amounts of time to untangle happen when bad writing often masks bad science.

Another feature of the sin of sloth is when authors do not make the effort to prepare their manuscript properly for submission. Certainly, publishers play a role in this problem by asking authors to make small and annoying changes to materials at submission. But if a paper gets through to revision, authors should follow the journal guidelines exactly so that all involved can use time efficiently. If papers have references formatted wrongly, incorrect figure formats, or missing author paperwork, journal staff and authors have to go through many exchanges to ensure that all the correct components are in place for publication.

Editors are often aghast at the number of problems with submitted manuscripts that reflect that the author just did not read the submission instructions!

**Bottom line:** Have multiple readers review and edit your paper for readability before you prepare your final draft to submit, and read and follow submission instructions.

#### Sin 6: Plagiarising the work of others

This much-recognised and growing sin involves the theft of other people's ideas, data or text – published or unpublished; intentionally or not without proper attribution. Functionally, plagiarism is theft. Mosaic plagiarism is also common and results from authors copying ideas and sentences but interspersing a few of their own words. Much is written on the subject, and a simple search in Google Scholar yields reviews, examples of institutional policies, and resources for learning and prevention. In my opinion, the flipside of

plagiarism is the skill of correctly citing sources in text. This is something that researchers can learn to do with the appropriate training, whether they are native or non-native speakers of English. Research about plagiarism suggests that although sometimes cribbing the words of others is unintentional, it is often done with full awareness.

The consequences of this sin are serious. With the help of powerful technologies and meticulous reviewers, Editors can usually uncover plagiarism and they tend to be unforgiving. Authors who commit this sin can expect correspondence from an editor usually with a rejection of a manuscript, a reprimand, and sometimes with a request not to submit to the journal again for a period of time. In more serious cases, Editors may take the case to the author's institution, which may result in formal hearings and possible loss of employment but definite loss of credible reputation.

**Bottom line:** Do not use the words or ideas of others without proper and complete attribution. Between plagiarism detection software and sharp editors and reviewers, plagiarism will usually be detected, so you should just not do it!

### Sin 7: Forgetting to smell the roses

Although calling this a sin may seem factious, I end my list with this because I believe this sin represents all the other sins rolled together, with a larger dose of ambition and ego. It is that sin of forgetting the things that really matter in life: family and friends. Working long hours and believing in the value of our contributions to science and health are good and worthy attributes, but living our lives in full context is – in my view – of ultimate importance. Science will move ahead one way or another. Take time to step away and put yourself and your work in context. Life is short and then we die.

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Appendix 1 Definitions of the	various forms of scientific misconduct
Authorship disputes	Any action that violates the principle that all named authors need to have made a substantial contribution to the work reported and to the manuscript.
Citation bias	The citation (or not) of research findings to influence the direction of results. This includes failure to read and understand the articles that are being cited or distorting their meaning.
Conflict of interest (COI)	A COI is a situation or relationship where two or more competing interests lead to an increased risk of bias or poor judgment and can be real, apparent or potential. Although not a misconduct in itself, it is the failure to declare it that is scientific misconduct.
Copyright	This is a legal right attributed to the author, publisher or distributor of scientific work.
Data manipulation	Similar to data falsification – often seen with digital images.
Duplicate/redundant publication	Publication of an article that substantially overlaps with one that is already published, with no clear reference to the previous publication.
Duplicate submission	Authors should not submit their manuscript in the same or another language to more than one journal at any given time.
Fabrication	Making up data/results.
False citation	Falsely citing a source or attributing work to a source when the material is not actually obtained from there.
Falsification	Reporting misleading facts such that the data are misrepresented.
Gift authorship	Offering authorship to individuals who have made little or no contribution to the manuscript.
Ghostwriting	When someone, other than the named author, has made a major contribution that is undeclared.
Human/animal subject violation	Most journals require authors to certify that ethical approval was sought for their work and that patients were appropriately consented.
Plagiarism	Unreferenced use of other people's published or unpublished work or ideas and passing them off as one's own.
Repetitive publication	Repeatedly publishing the same information such as in journals and then in books.
Salami publication	When related papers are submitted to different journals with no cross-citation such that a single study is split with the smallest publishable unit into as many publications as possible.
Self-plagiarism	Re-using one's own work with the intention of presenting it as novel and not attributing the original source.



### Coming up next time

Predatory open access publishing refers to an exploitative and often corrupt publishing business to which many academics unwittingly succumb. The term was coined by Professor Jeffrey Beall who, after receiving a large number of emails requesting submissions to previously unknown journals, started researching these and created Beall's List of Predatory Publishers.

Jeffrey Beall is Scholarly Communications Librarian at the Downtown Denver Campus of the University of Colorado, Denver. Beall authors the blog *Scholarly Open Access*, which lists and describes questionable scholarly open access publishers. His work has appeared in *Nature* and in many library science journals. It is a great honour that the next article in this highly successful series is by Professor Beall.