

Calling All Whistleblowers: Research Fraud and the Stopgap Solution

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Falsification of data and the publication of fraudulent papers is a new and growing problem in the world of scientific research. Papers published with fraudulent data hurt the reputation of the scientific community and undermined the trust of the public. Driven by stress, selfish ambition or other reasons, scientists are knowingly publishing inaccurate and "doctored" papers which have serious ramifications, including the possible mistreatment of patients. Several authors acknowledge the need for change and offer ideas on how to solve this problem; however, some of these solutions will require time to have an effect. The aim of this essay is to continue the discussion of this serious issue and to suggest that the best short term fix for the problem lies in those willing to "whistleblow" on scientists who abuse their position.

Imagine you are the CEO of a major pharmaceutical company. You are interested in creating a new prescription drug which will help patients with post-operative pain management. Before spending any money you consult a scientist who has relevant publications and seems to be an expert in his field. After reviewing his data, all evidence points to the fact that this drug is a great investment. You make the decision and spend billions of dollars on the production, marketing, and sale of the drug. Fast forward to one year later: the sales of your drug are plummeting; your business is losing money; there are ongoing investigations of the research your product is based on. As it turns out, the seemingly successful scientist you consulted was a liar. And all of his data was fabricated. Additionally, the health of some of the patients treated with the drug may have actually declined, despite taking a prescribed drug they were told would help them.

Sadly, the situation described above is based off of an actual event. In fact, it is almost exactly what happened in the United States in 2000 (Borell, 2009). A man by the name of Scott Reuben falsified data in order to get his papers published and to receive an unknown amount of money—suspected as much as \$100,000—from the pharmaceutical company Pfizer (Borell, 2009). Reuben's specialty was anesthesiology and the drugs he researched and published about were purposed to help with pain management after surgical procedures (Borell, 2009). Reuben's fraudulent research tactics, which included forging signatures of reviewers, faking co-authors, and completely doctoring false data, led to Pfizer's spending of billions of dollars and the prescription of potentially harmful drugs to patients (Borell, 2009). Although this case is somewhat of an anomaly, data falsification in literature is not. Fraud is happening throughout the scientific community and is on the

rise (Corbyn, 2012).

Indeed, quantitative studies (Fang, Steen, and Casadeval, 2012) have shown that in the last few decades the number of fraudulent research being published and subsequently retracted has been increasing. The papers in question, those retracted for fraud or suspected fraud, comprise 43% of retractions (Fang, Steen, and Casadeval, 2012). Everybody makes mistakes, but it was proven that these papers were purposefully doctored or altered in a way that shows intent to deceive by the author or authors (Steen 2011). The studies also provide evidence that these articles are most frequently submitted to "high impact" journals, and are written by many authors (Fang, Steen, and Casadeval, 2012). These facts are staggering and show the consequences might be more serious than expected. What is worse is the likelihood that "1,000 instances of research misconduct go unreported annually in the United States" (Kornfeld, 2012). There is a probably a scientist right now working on a project based off of faulty data.

Scholars are beginning to discuss the negative effect of the phony data, writing, "fraudulent publications that affect public perception and policy...can be destructive to society" (Casadeval and Fang, 2012). The researchers are worried that if practices of falsifying data are allowed to continue, the result will be a mistrust of the entire scientific effort. Other scholars agree, stating that these types of activities "corrupt the essence of the scientific enterprise" (Steen, 2011). It may sound dramatic, but when considering what is at stake, these authors have a point. Donald Kornfeld, professor of psychiatry at Columbia College of Physicians and Surgeons, states that "the damage that is inflicted on others in wasted time, effort, funds, and ineffective or dangerous clinical care is incalculable" (Kornfeld, 2012). When all of the implications of the fraudulent research are considered, a concern for the downfall

of the scientific enterprise doesn't seem exaggerated at all.

If it is so obviously wrong to do, why are more and more people attempting to publish fraudulent papers? Perhaps a closer look at the famous saying, "publish or perish" might provide some insight, as the reality behind it might be a driving factor for the surge in research fraud. Post-docs and professors are expected to publish regularly in order to move up or to keep their job and above all, fund their research. When one publishes often, it is easier to gain funding and vice versa. Unfortunately, there is not enough funding to go around, and the number of those in need of funding is growing; "talent floods the field and funding decreases" (Kornfeld, 2012). As more and more Ph.D.'s are pumped out of universities, fewer and fewer jobs are available. Because of this, the few available jobs are extremely difficult to land. And because the caliber of the applicants is so high, the competition is even fiercer. Exhaustingly, the fight continues from there, as a secured job does not equal secured funding. Even established professors are required to compete for grants. As Kornfeld points out, "the resulting heightened competition for these limited dollars has created an environment that is highly conducive to research misconduct" (Kornfeld, 2012). It is as if scientists feel they are playing an unfair game; they might as well disregard the rules.

Undoubtedly, lack of funding is a major source for fraud, but it is not the sole cause. Some think there might be more sinister reasons for some of those who attempt to deceive publishers. One such author writes, "factors that may promote fraud, [include] a desire for personal fame or financial gain or competitive advantage; in addition, some scientists may exhibit the hubris of certainty before the results are fully known" (Steen, 2011). One would hope that this type of motivation is not the primary reason behind the current problems; however, it would be naive to think that no scientists were driven by the reasons Steen mentions. Lastly, there is the priority rule. The fact that science operates on a "winner take all basis" contributes to such practices as citation bias, secrecy, and the appropriation of others ideas and data" (Fang, Steen, and Casadeval, 2012). The focus is on the first to discover, the big publications are looking for novelty.

Although new ideas are exciting, the emphasis on being first to deliver groundbreaking results squashes opportunities for openly sharing ideas and promotes tweaking data in order to get the "wow" effect publishers desire. Considering the situation many scientists are in, complete with all

coinciding pressures, should those who knowingly publish fraudulent manuscripts be "cut some slack?" The answer is very simply no. There are definitely problems with the current state of scientific funding and the stress involved in attaining it. However, one does not enter the field without the knowledge that the road to success will be a hard one.

Regardless of how difficult the job is, a few simple points remain: First, fraudulent papers can lead to the mistreatment of patients. Much of today's research is translational; meaning the findings of basic science labs can have clinical applications. Those who knowingly submit manuscripts with false data risk contributing to the mistreatment of patients. This is simply unacceptable. Second, publishing phony results can, and more than likely will, misinform students who will become future scientists. Moreover, it can lead someone down the wrong path for research, wasting their time and money and hurting their career. Third, as more scientists attempt to dupe publishers, the "positive view of science and scientists" (Casadeval and Fang, 2012), that society current holds is being slowly degraded. This could result in skepticism of your doctor's prescriptions or reluctance of big companies to donate money to research. The last hypothetical outcome clearly shows the counter-productive nature and possible consequences of lying in scientific papers. Despite the fact that there is a considerable amount of stressors on scientists, when considering the impact fraudulent papers can have on the scientific community, and the world at large, there can be no excuse for this type of action.

So, what can be done? One essay describes possible solutions, including administrative reforms such as, the increased use of checklists, formation of a central database of scientific misconduct, and uniform guidelines for retractions (Fang, Steen, and Casadeval, 2012). These changes can be put into motions relatively quickly, unlike other suggestions the paper mentions. Solutions such as "fixing the disproportionate payoffs for discoveries, re-evaluating the incentives for scientists, and focusing on ethics when training scientists" seem more promising as possible solutions, but will take longer to implement (Fang, Steen, and Casadeval, 2012). Other scholars focused on the way retractions are handled. Their focus was on the fact that journals either "used ambiguous wording, fail[ed] to state the reason for retraction, or had retractions issued by the authors" (Wager and Williams, 2011). If publishers dealt with retractions in a stricter and uniform way, perhaps scientists would be less willing to attempt deceiving them.

The overarching problem seems to be the

way scientists are incentivized. The system for acknowledging discoveries in science and the competitive nature of being the first to publish on an issue is unhealthy. Instead of sharing information and making discoveries as a whole scientific community, different sects—and individuals—are keeping information to themselves in hope of being first author in *Nature* or *Cell*. These are big problems that require large scale and elegant solutions. However, it seems that Kornfeld has a good idea for where to start: “because the total prevention of research misconduct is impossible, the scientific community must depend on whistleblowers to minimize the presence and/or persistence of flawed data in the scientific literature” (Kornfeld, 2012). Large-scale changes can be preceded by changes on a smaller level. Reform can begin with those who have the conviction and strong ethical backbone needed to take a stand against those who are ruining the name of scientists everywhere.

One might reasonably suggest that these types of bold students and scientists would be those graduates of schools with particularly strong honor codes. These students have been molded through four years of scientific study in an atmosphere that encourages, if not demands, strict adherence to a code of rules in which honesty, integrity, and accountability are held as most important. Students are taught and trained not to lie, cheat, or steal. Some schools such as Hampden-Sydney College, The United States Naval Academy, Virginia Military Institute, and Middlebury College even go as far as adopting a policy of non-tolerance for those breaking the code. These are the students who, as they transition into professional science, have the “right stuff” to both spot fraud and “call out” those committing it. Until a large-scale reform of the scientific endeavor is put into play, it will be these students who have the chance to step up as leaders and make a change in the scientific community.

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