

# Blowing the Oboe, not the Whistle, on Bad Science

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[This paper and PowerPoint slides are available for all to use. Please feel free to put these resources to effective pedagogical use. If I'm lucky, you will share with me stories of how this turns out for you.]

Research on bad science has advanced rapidly. We have learned that ethical misbehavior<sup>1</sup> is not just the work of a few bad apples, but is something virtually everyone does, deliberately or inadvertently. Most scientists report having witnessed colleagues engaging in questionable behavior (Titus, Wells & Rhoades, 2008; Keith-Spiegel & Koocher, 2010).

What do we do about this? We catalog the unethical deeds committed and develop rules telling us "Don't do this, or that." We formally identify fabrication, falsification and plagiarism as scientific misconduct, which is punishable by the Office of Research Integrity and by law.

[Slide 2] However we largely ignore other forms of bad science that do as much or more harm. What is Bad Science: some examples: biased sampling, careless record keeping, improper analysis of data, improper reporting of research procedures, and abuse of subjects and colleagues.

The rules of good science seem obviously designed for others, because we ourselves are ethical, aren't we? We have rules for ourselves such as: "If you witness unethical behavior, report it." Then we realize that acting on such advice will likely ruin our career, and the perpetrator is likely to go Scot free.

Many have observed that courses on responsible conduct of research, which usefully set standards, will not deter those who find it advantageous to ignore rules of science. Wise and responsible mentoring has been proposed as our best chance to deter misbehavior among scientists and to teach others how to effectively shame errant colleagues into responsible conduct of research (e.g., Kornfeld, 2013; Godecharle, Nemery & Dierickx, 2013).

[Slide 3] What are some of the elements of such mentoring? Recent research involving scientists who had witnessed research wrongdoing has suggested some approaches, which are described below.

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<sup>1</sup> Research misconduct refers to fabrication, falsification and plagiarism, but there are many other forms of research misbehavior which are at least as damaging to science, including sabotaging the research of others, reporting only those findings that support one's predictions, cutting corners when recruiting research participants so that inappropriate populations are recruited, and engaging in other forms of careless research practices. Other forms of research misbehavior include violation of regulations governing human research, misappropriation of research funds, etc.

## Blowing the Oboe

I interviewed 135 NIH PIs who had witnessed research wrongdoing (Sieber, 2012). All were grateful to be interviewed because they felt they hadn't been able to resolve the problem as well as they'd like. They wondered if there was a tidy solution they had overlooked. Typically there isn't. Here's why:

[Slide 4]

- People low in the hierarchy –staff, students, post-docs, and the untenured – generally get the blame for the misdeeds of their superiors and will only make their situation worse by bringing the misconduct out in the open.
- Administrators typically don't have effective ways of handling misconduct.
- Casebooks that help us detect unethical behavior don't give us satisfactory solutions.

[Slide 5] Whistleblowing is notorious for causing more damage to the whistleblower than to the culprit. Adjudication of the case can take years, at great cost to the whistleblower. Whistleblowing rarely prevents the bad science from harming the scientific record, other scientists, or society. The cost is huge to all.

[Slide 6] However, some have found clever solutions. To effectively deter bad science, I propose that we need to ask different questions and look for solutions in new places. We need to seek clever things that witnesses of misbehavior have done that have worked. I found such people and so can you.

[Slide 7] The people I found had blown the oboe, not the whistle. The oboe is powerful but quiet. Blowing the oboe is a beneath -the-radar response that you don't notice unless you are very nearby. Here are a few examples:

- [Slide 8] A group of graduate students were editing a prestigious journal and received an interesting but naively written article from a graduate student at another institution. In it she profusely thanked her advisor by name. Later, they received a more polished version of the same paper "authored" by the advisor. They spent a lot of time brainstorming about how to respond, as they did not want to hurt the student by raising it with her or with her advisor. They met each day to see if they could figure out a way to solve this wrenching problem. After a few sleepless nights, they came up with a way to blow the oboe – they sent both papers back to the advisor, thanking him for his and saying that they were going to publish the two papers side by side. He withdrew his paper.
- [Slide 9] A student handed in "data she had gathered" that fit the curve perfectly, with all the raw data in the same hand writing. The professor gave a lecture on response variance, then showed a slide of the falsified data to illustrate how one would know data had been faked. The student got red in the face, apologized privately, and asked if she could be given a chance to gather valid data and turn it in. Her request was granted.
- [Slide 10] Senior researchers, in study after study, cherry picked to support their basic hypothesis. Junior researchers, powerless to stop this directly, sponsored seminars with food and wine and invited colleagues in related fields who brought other perspectives, but were not

seen as competitors, and did not arouse defensiveness. The lab finally began moving in productive new directions.

- [Slide 11] A collaborator on a grant proposal contributed preliminary data which he admitted to cooking. His partner knew the politics of their department all too well, and knew that making accusations would bring disaster. Without making accusations, the partner simply dismissed this as a dumb idea because they wouldn't be able to replicate the data after they got the grant. The idea of collaboration died.
- [Slide 12] A post-doc, dependent on his lab boss for good recommendations, was handed data to analyze that were obviously falsified. He knew he had been handed a smoking gun. He worked with his PhD advisor and others to find a new position and invented an excuse to quit that lab.

[Slide 13] As these stories illustrate, blowing the oboe solves or ameliorates the problem without great harm to the oboe blower. It typically uses guilt and shame induction to cause the wrong-doer to shape up. It brings out the best, not the worst, in all concerned. It is based on a plan that can be preserved as an engaging story to share with others.

[Slide 14] Stories such as these are worth retelling and sharing in as many venues as we can. People remember good stories.

[Side 15] What is so special about stories? Humans are hardwired to listen to and understand stories. That is how civilization evolved before the written word. We love stories. We remember them. They guide our behavior.

### **The Value of Storytelling**

I've just been telling you stories, and you probably don't remember them all. But if you package a story effectively, people will remember it, and use the idea as needed. The story, or a reasonable facsimile of it, can then become a tool for mentoring and story-telling among students and their faculty mentors. An engaging style of mentoring is viewed by many as something more likely to produce ethical behavior than a set of rules or an RCR course, though the RCR course and rules provide an important standard for the honest researcher (Godecharle, Nemery & Dierickx, 2013; Kornfield, 2013). Storytelling is a powerful tool for moral socialization, as every minister, priest, rabbi and other religious leader well knows. Besides, significant stories shape our personal identities.

Do you remember the story of the graduate students who, after much problem solving and a few sleepless nights, figured out how to solve the problem of the senior professor who apparently was plagiarizing his student's work? Could you retell some reasonable facsimile of that story? You probably could because it was an effectively packaged story. Humans have been telling stories ever since they developed language. We are hardwired to tell, hear and remember stories, and to use them as a method of cultural transmission.

People learn from good stories. You can learn to develop and tell good stories. Kendall Haven, a distinguished physicist at Lawrence Livermore Laboratories, recognized that scientists are poor story

tellers. They don't know how to interest students or the public in science. Kendall Haven has become a professional story teller and written great story books about science and math. He has done research on what makes a good story, and the results are reported *Story Proof: The Science Behind the Startling Power of Story* (Haven & Dicey, 2006). Look him up on Amazon and see all the great books he has written for school children about exciting scientific events.

[Slide 16] Here are the characteristics of a powerful story:

1. It is about people with a goal and a reason for doing what they do. What were the graduate students seeking to do?
2. The people run into an obstacle. What was the obstacle?
3. The more they struggle with the obstacle, the more gripping and memorable the story is.
4. There are key details that make the story seem real and vivid to listeners so the listener can visualize what is happening.
5. The story ends when the people resolve the problem. We remember how they solved it.
6. The story is intriguing enough that we remember it and retell it to others who respond similarly.

Where do we begin?

1. Identify important problems in dealing with scientific misconduct.
2. Identify some quiet, effective solutions – those stealthy oboes.
3. Package them as memorable stories.

**[Slide 19] What are some important problems in RCR?**

**[Slide 20] What constitutes a solution to the problem?** Typically, perpetrators are so concerned to save face that they do not “come clean” but they can be motivated in various ways to “shape up” as the cases above illustrate. What are some of the strategies for making them shape up? Should we expect total reform of the person's character? (Answer: Fat chance.) What are good outcomes?

**[Slide 21] How long does it take to find a creative solution?** We need stories of how much and what kind of persistence it took people to come up with creative solutions. One of the problems facing those who seek to prevent misconduct is that they fail to realize that it takes time, creativity, and typically also collaboration with others to come up with creative solutions.

**[Slide 22] What are Useful Aids to Creativity?** Those who have effectively blown the oboe have often credited group problem solving with supportive colleagues and family. They work to define the various facets of the issue. They envision and practice various solutions via roleplaying. They review oboe solutions others have created. They don't rush into it. They persist.

**[Slide 23] What stupid rules promote scoff-law behavior?** We need to identify rules that are nonsensical in some situations, and learn how scientists have let authorities know that they would be doing wrong by enforcing those rules. DeVries, Anderson & Martinson (2006) identify forms of “normal misbehavior” that are promoted by unreasonable rules, or by reasonable rules generalized to the wrong contexts.

**[Slide 24] How does one confront a misbehaving colleague?** Most normal mortals are speechless in the presence of misbehaving colleagues. If we know just how to begin, what to say, things can turn out quite differently. The quintessential expert on how to begin such conversations is C.K.Gunsalus, who explains how to begin and how not to begin in her brilliant book *The College Administrator's Survival Guide* (2006). The principles of knowing how to begin are too extensive to summarize here. Read Gunsalus!

**[Slide 25] How does one reform institutional cultures that promote misconduct?** Some institutions have such draconian requirements that people feel they must cheat to survive. Find institutions that have created a better culture. Tell the story.

**[Slide 26] Mentor our colleagues and students.** Now we have a research and story writing agenda. With these tools, we can create an engaging (juicy) environment in which to mentor future scientists and professionals for better conduct. An effective mentor is also an effective story teller. Think of the mentors who have told you memorable stories.

**[Slide 27] Write and publish good stories about how to effectively deter research misbehavior.** Tell your stories at the next RCR meeting. You can probably find journals in your field that will publish them. If not, as editor of the Journal of Empirical Research on Human Research Ethics (JERHRE), I will publish them. Email me at [joan.sieber@sbcglobal.net](mailto:joan.sieber@sbcglobal.net).

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