Title: Structural Forces and Moral Exemplars in Research Ethics

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Length: 1 Day (50 minutes)

Problem Statement: Understanding research fraud requires understanding the structural forces that incentivize such fraud.

Learning Objectives:

Students will understand the values and norms of ethical research practices.

Students will understand the structural features of academic reputation that encourage fraudulent research practices.

Students will understand the pressures facing working scientists and reflect on these pressures as potential scientists themselves.

Students will practice thinking through moral exemplars.

Description: This module is designed to follow after a general research ethics lesson given at the introductory undergraduate level. It looks at accounts that seek to identify and explain the structural forces incentivize fraud in scientific research. It then presents Darwin's response to Wallace sharing his research as a moral exemplar and asks students to think through this case, thereby practicing moral reasoning skills.

Topic 1: Money, Honor, Fraud

The main activity of scientists is research. As a social practice and an institution, academic science is structured by norms. Norms are conventions, beliefs, or facts about how people ought to act. Robert Merton's 1942 book, *The Sociology of Science*, argued that four norms guide the scientific community's research practices: communalism, universalism, disinterestedness, and organized skepticism. These are sometimes referred to as CUDOS.

1) Communalism is the norm that all data, research findings, etc., are public goods; individual scientists do not "own" their data, and for example, should not be able to charge money to access it. When we say a discovery "belongs" to a certain scientist, say *Darwin's* theory of evolution, this does not imply they 'own' that discovery as when one has intellectual property rights that give exclusive right to monetize that property. Instead, it is a label of esteem (which we will return to below).

2) Universalism means that a scientific claim is treated the same, regardless of who makes it.

3) Disinterestedness is the norm that science is done as a social good, not for individual benefit (importantly, disinterested is not the same as uninterested). This is also meant to suggest impartiality. One accepts the results or records the results without putting one's thumbs on the scale to prove a preferred hypothesis.

4) And finally, the norm of organized skepticism is that all claims must be subjected to scrutiny and tested rather than accepted based on the authority of the one making the claim. It is organized in the sense that skepticism is embedded in scientific institutions and practices (as opposed to being unstructured individual skepticism).

Merton claimed that fraud in the scientific community was extremely rare, if not unheard of, and pointed to the widespread acceptance of these four norms to explain this lack of fraud (as opposed to other spheres of human activity where fraud is more common). This suggests that science is successful in part because of the sort of ethical community that it is.

However, in the last few decades, there have been many cases of fraud in scientific research brought to light. Examples include an autism researcher retracting 23 articles (which had been out for almost a decade) over conflicts of interest and peer review fraud,[1] a spider biologist fabricated data,[2] and marine biologist falsifying experiments and data.[3] The peak of this is perhaps a 2012 wherein two co-authors are accused of independently altering data for, ironically enough, an experiment on dishonesty.[4] (note: these reports, though not the fraudulent research itself, are from within one year's time, and many more examples could be given.) If norms are supposed to guide behavior, then what is behind such cases of fraud?

There will always be cases where individuals violate the norms of the institutions and practices they are a part of (call these "bad apple" cases). However, when *patterns* of fraud emerge, it becomes more likely that there are negative incentives at play. An incentive is a reward that encourages certain types of behavior. If these incentives are known and become rules that guide behavior, then they fall under norms.

One account of fraud and sloppy research in general comes from James Stacey Taylor's *Markets Within Limits*. There, he argues, market norms have come to influence academic research, much to its detriment. He points out that a researcher's financial incentives are to publish high impact research in major journals as this improves their chances at getting a raise, being offered more prestigious and higher paying positions, speaker fees for invited talks, etc. Scientists are then incentivized to spend as much time as they can on their research.

Because of the time research takes, scientists (and academics generally) will spend less time doing quality peer review work. This will then increase the number of honest mistakes and fraudulent work

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[1] Montanari, Shaena. "Prolific Autism Researcher has Two Dozen Papers Retracted." (2023). *Spectrum News.* https://www.spectrumnews.org/news/prolific-autism-researcher-has-two-dozen-papers-retracted/

[2] López Lloreda, Claudia "University investigation found prominent spider biologist fabricated, falsified data." *Science*. (2023). https://www.science.org/content/article/university-investigation-found-prominent-spider-biologist-fabricated-falsified-data

[3] Enserink, Martin. "Star Marine Ecologist Committed Misconduct, University Says." Science (2022). https://www.science.org/content/article/star-marine-ecologist-committed-misconduct-university-says

[4] Piper, Kelsey, "Is it Defamation to Point Out Scientific Research Fraud?" (2023) *Vox*. https://www.vox.com/future-perfect/2023/8/9/23825966/francesca-gino-honesty-research-scientific-fraud-defamation-harvard-university

that gets published. In addition, because of the possible financial rewards for getting research published and low incentive for doing quality peer review work, this structure then incentivizes fraud and sloppy research. In some of the examples of fraud above, it was only years later that the fraud was discovered, meaning that the financial benefit was reaped well before they were discovered. Is this then a result of market norms encroaching on and eroding Merton's norms of communalism and disinterestedness?

Merely thinking about fraudulent research as caused by financial incentives, however, does not explain many of the cases and the unique structure of academic fraud. Philosopher Liam Kofi Bright argues in the paper "Why Do Scientists Lie" that there are plenty of incentives for fraud within the existing structure of scientific norms. Thus, structural incentive for fraud would exist even if we exclude the encroachment of market norms. In particular, he argues that explaining fraud by the encroachment of market norms has a difficult time explaining the people who do go into academic (rather than private) research. People who become research scientists at academic institutions are often choosing to do so over more well-paying corporate jobs that require the same skill set, often because this means they will have more freedom to pursue the research they think is most important. These individuals value the very norms Merton argues structure academic science, and they enjoy work that does not need to be immediately justified by market norms such as profitability. Such people, then, seem to have already chosen the search for truth over the quest for money. If so, it is very unlikely that financial incentives can be the only, or even primary, explanation for research fraud in academia.

Here we must look at a different kind of economy, what could be called a *prestige* economy. In a prestige economy, reputation, notoriety, popularity, and honor all function as a means of distributing resources. We noted above that Mertonian norms make room for a prestige economy in the way scientists accrue esteem over their research. Prestige is gained through producing highly original and influential research published in high-ranking journals. There is some overlap with Taylor's account here in that esteem in academic science often translates into access to resources. "The informal judgements scientists routinely make about the quality of one another's work, and the potential or intellectual capacity of the scientists doing the work, are not just the stuff of idle gossip, but an essential element of how we in fact allocate the resources necessary to carry out scientific research," (Bright, 2021). Even if you don't particularly care about honor, credit, esteem, etc., because it is part of the process of accessing the resources to do your job or seek truth, you will likely have to act as if you do.

However, in distinction from Taylor, such resources are often not about, at least not primarily, personal enrichment (and so, are not financial incentives). Even grants are often (from the perspective of the researcher at least) more about the prestige of receiving the grant than the financial incentive because only a small percentage of grants, if any, can be used to pay the researcher. However, there is also the indirect financial incentive, because by getting big grants the researcher confers their honor onto the institution they represent and demonstrates their financial benefit to the university. Academic scientists then work in conditions constrained by at least two, often intersecting, economies.

If Bright is right, then scientists who wish to maintain the reputational integrity of their fields and their research have a much more difficult problem! Taylor argues for separating market norms from academia, whereas, if Bright is right, the incentives for fraud are not just from market norms, but also inherent in scientific (Mertonian) norms. Bright points out that this prestige economy is equally responsible for many of the valuable features of scientific research. Some positives of credit-seeking structures include how seeking prestige incentivizes knowledge sharing (which speeds up research, fosters teams, and

makes scientific research open to non-specialists) and provides a counterforce to conformism by incentivizing methodological and intellectual diversity. Reducing esteem-based incentives may then risk harming some of the most positive features of science. If so, then addressing the problem of fraud is not as simple as insulating academic research from market norms (which is already a big task).

Discussion Questions 1:

Are Mertonian norms good norms for research science?

Do you find the market-based or esteemed-based account more explanatory? Why? In what ways might they work together?

What are some other positives of esteem-based incentives? Can you think of norms or practices that might preserve these positive effects while lowering their negative effects? What about for market-based incentives?

Topic 2: Moral Exemplars

With a problem as difficult as how to reduce fraud, we should look for ethical guidance. When looking for ethical guidance, there are many different accounts of where to look. Often the suggestion is to turn to the rules, norms, and other such codes of the institution one is a part of. However, structural problems like those we talked about above are cases where a strategy that looks to more scrupulously apply existing rules and norms fails because it is the rules and norms that create the structure and its incentives. In this situation, one possible approach is to look to moral exemplars and what we can learn from them. Moral exemplars are cases where someone provides a model for how to act well, and so is held up as someone to imitate and provide a standard of behavior to hold others to.

This is an approach often taken by Virtue ethicists. Virtue ethicists defend the idea that the most important ethical question is what is it to have a good character? This is opposed to those who think ethics is mainly about getting good consequences (called Consequentialists) and those who think it is about having the right intentions or following the right rules (called deontologists). In trying to answer the question of what is a good character for a scientist to have, one can look to scientists we already think of as good role models, or at least who act well in particularly difficult situations, and then ask what was their character like? What habits, character, or personality traits, etc. did they have that led them to act well? This is what we mean by the moral exemplar approach.

In biology, we can look to an example set by Charles Darwin. As a student, Darwin himself was a victim of academic misconduct when his teacher, Robert Grant, published a paper claiming some of Darwin's research on sea creatures as his own. Years later, Darwin was working on his theory of natural selection. While the theory was mostly worked out, he was reluctant to publish until he had finished the large book on the subject he was working on. He then received a letter from Alfred Russel Wallace that outlined an evolutionary theory similar to Darwin's own.[5] Rather than follow the bad example of his teacher, Darwin shared the letter with two of his colleagues. These colleagues then presented Darwin's and Wallace's

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[5] **Instructor's note:** here may be a good place to stop and ask students to brainstorm possible responses and motivations, including focusing on the negative ones (e.g., for Darwin to pretend he never got the letter and publish his work immediately) to look at very incentives operating in this situation.

work to the Linnean Society, effectively given both scientists credit for the theory (Darwin did not attend due to the death of his youngest son, and Wallace did not attend because he was still travelling for research). This also spurs Darwin on to write a much smaller book based on his theory, *On The Origin of Species*, and publish it in a little over a year's time (Bright uses Darwin's motivation to publish *Origin* as a positive example of esteem norms). Clearly, jointly presenting their research did not cost Darwin any esteem from the scientific community.

Discussion questions 2:

How does Darwin's example exhibit Merton's norms?

Why is this a positive example of esteem norms? Could some of the unethical routes Darwin could have taken (e.g., pretending to have not received the letter and publishing immediately) also be incentivized by esteem norms? What might lower the negative incentives of the esteem economy in science?

What character traits might have allowed Darwin to act well in this case?[6]

If you find out someone's research is close to yours, what might you do in response?

Activity 2: **Brainstorm: What Makes a Good Member of the Scientific Community?**

Ask students to brainstorm character traits of good scientists, returning to both the Darwin example and Mertonian norms for inspiration. Then ask of the norms discussed (Mertonian, Market, and Esteem norms), how do they incentivize or dis-incentivize someone to have those character traits. Finally, ask for students to propose possible positive norms for research science and collectively think through what the associated incentives for the proposed norms may be.

Ethical Reflection:

Science is a community endeavor, and communities are structured by norms, incentives, practices, etc. These motivate behavior, but often in ways that can be harmful to the practice itself. As communities and the surrounding world they live in change, norms and incentives have to be re-evaluated and practices re-designed to ensure that the community does what it aims to do. To do so requires understanding how those incentives work and what it means to be a good member of that community. If we are lucky, we can find good examples to help us think through this. However, this raises the important question: if we are unsure of what good norms are for a practice, how can we recognize a moral exemplar?

Further Sources:

Bright, Liam Kofi (2021). "Why Do Scientists Lie?" *Royal Institute of Philosophy Supplement* 89:117-129.

Enserink, Martin. "Star Marine Ecologist Committed Misconduct, University Says." Science (2022). https://www.science.org/content/article/star-marine-ecologist-committed-misconduct-university-says

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[6] **Instructors note:** some possible answers include valuing science as a community rather than an individual pursuit, a sense of fairness (possibly brought on by Grant's negative example, whereas others might have internalized the lesson that 'if it was done to me, it is okay to do to others'), or a value of openness.

López Lloreda, Claudia "University investigation found prominent spider biologist fabricated, falsified data." *Science*. (2023). https://www.science.org/content/article/university-investigation-found-prominent-spider-biologist-fabricated-falsified-data

Merton, Robert K. (1979). *The Sociology of Science: Theoretical and Empirical Investigations*. University of Chicago Press.

Montanari, Shaena. "Prolific Autism Researcher has Two Dozen Papers Retracted." (2023). *Spectrum News.* https://www.spectrumnews.org/news/prolific-autism-researcher-has-two-dozen-papers-retracted/

Piper, Kelsey, "Is it Defamation to Point Out Scientific Research Fraud?" (2023) *Vox*. https://www.vox.com/future-perfect/2023/8/9/23825966/francesca-gino-honesty-research-scientific-fraud-defamation-harvard-university

Taylor, James Stacey. (2022). *Markets with Limits: How the Commodification of Academia Derails Debate*. Routledge.