Science is broken. Part 1.

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the WINNOWER

SCIENCE AND SOCIETY

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Most scientists will agree that science exists to build and expand on knowledge—what we have come to understand about the natural world. What an ambitious goal! What an exciting prospect! In the 1940's, a sociologist by the name of Robert Merton deconstructed the existence of science even further, specifying that the “ethos of modern science” should (quite admirably) embody five core values: communalism, universalism, disinterestedness, skepticism, and originality (Merton, 1942). To me, these ‘Mertonian norms’ capture the essence of science as seen through the lens of my naive 19-year old self: as a collaborative, self-correcting, innovative, and ever growing effort. At the time I truly believed the system was designed in a way that made it inherently flawless, and as a result, everything about science excited me. As I involved myself increasingly in research, I became certain that I wanted to pursue science as a career. I wanted to do my PhD. I wanted to do a post-doc, maybe two! I wanted to teach. I wanted to publish in *Science*.

When I entered graduate school, it became painfully clear that academia was not all it was chalked up to be. There were big problems with fancy journals like *Nature*, there were very few academic jobs, and sometimes the research questions seemed too far removed from practical reality. I quickly became cynically attuned to the problems in science, and my curiosity for the ivory tower as a bizarre microcosmic bubble sometimes outpaced my interest in auditory perception (my area of study). Consequently, over the course of the last year or so, I came to the following conclusions:

SCIENCE IS NOT COMMUNAL.

Scientific findings are only available to a select elite: those with money or those affiliated with an institution with money. Knowledge and discovery is hidden behind a paywall.

SCIENCE IS NOT UNIVERSAL.

Not everyone can contribute to science, for exactly the reasons stated above. Science builds on existing findings; so without access to such aforementioned findings, a large portion of the population is excluded from participating in moving science forward.

SCIENCE IS NOT DISINTERESTED.

The egos are big and the jobs scarce, and such a combination can be dangerous: leading to more than the occasional rat race, and a spirit of competition rather than collaboration. Scientists are slaves to flashy journals and their outdated metrics. Sometimes I get the feeling that prestige means *more* than discovery, and other times I feel the two are simply interchangeable (which isn't that much better).

SCIENCE IS ORIGINAL, BUT AT WHAT EXPENSE?

Emphasis is placed so heavily on originality and innovation that reproducibility has been left behind and

forgotten. But what value does a “finding” hold if it is not replicable?

SCIENCE IS SKEPTICAL, BUT ONLY SOMETIMES.

This goes hand in hand with the above statement. We question the validity of, and usually reject, null results on the basis that not finding something is less valuable then finding something fantastical. On the other hand, we take fantastical results at face value and often don’t bother to replicate them.

In short, it slowly became obvious to me that science (or rather, the system it had taken shape as over the years) was broken. It was outdated. Sometimes, it was sluggish. It was an archaic system that was fitting more or less awkwardly within modern technological frameworks. So much of the current system ran completely counter to the fundamental spirit of science that I had learned about and embraced in my undergraduate years.

Which leads me to what I want to discuss in Part 2 of this series. Last weekend, I was fortunate enough to have attended OpenCon—a conference catered to students and early career researchers to network, learn about, and discuss various “open” solutions to academic research and education. It was mind blowing. It was inspiring. It was everything cynical present-day-me needed to hear: *Science was broken, but there are ways we could fix it.*

Part 2 on OpenCon 2014 coming soon!

REFERENCES

Merton, Robert K. "Note on Science and Democracy, A." *J. Legal & Pol. Soc.* 1 (1942): 115.