

Galileo's Middle Finger: Heretics, Activists, and the Search for Justice in Science

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Alice Dreger's book *Galileo's Middle Finger: Heretics, Activists, and the Search for Justice in Science* is a ten-chapter, well-written, fast-paced account of the ways she claims scientists and activists have constrained intellectual debate while protecting unethical practices and self-interest. The work of established and respected scientists has been discredited, she argues, through personal, ad hominem attacks, internet bullying, misinformation, and general character assassination. Besides the human toll these activities can take on scientists trying to add to the body of knowledge, the cost to society as a whole is its chilling effect on intellectual freedom and scientific discovery. Engaging chapter titles include – *The Talisman* (a reference to Galileo's Middle Finger on display in the Uffizi Museum in Florence); Funny Looking; Rabbit Holes; Tangled Webs; A Show-Me State of Mind; The Rot from Within; Human Natures; Risky Business; Doctor, My Eyes; Doomed to Repeat?; and, Truth, Justice, and the American Way. Three central themes are explored in the study – declared in the subtitle: heresy, activism, and the search for justice in science.

Heresy

Political, religious, or other considerations can take precedence over the scientific process – hence the metaphor of Galileo's Middle Finger. Historically, people with divergent views from the dominant social norms have been persecuted, excommunicated, and in medieval times, for example, burned at the stake (Murphy, 2012). Dreger gives contemporary examples of scientists, heretics, who have bumped up against established norms and been metaphorically burned at the stake.

With the intrusion of politics into science, we are in danger of holding on to our own sacred truths and rejecting scientific evidence, argues Dreger. Unorthodoxy and the ability to consider all views – even those deemed heretical – are needed for an enlightening wave of new science and, we would add, for leadership and organizational development (Hamel, 2000; Kleiner, 2008). Abuse of what has become known as political correctness, censorship, or the allowance of politics, electoral or organizational/social, to run amok within scientific fields or in any other arena has potential for harm, even though historically, as a guide for human interaction norms, so-called political correctness initiatives have been instrumental in creating a more civil society necessary for collaborative organizational cultures, scientific, and social advancements.

However, Dreger shares harrowing examples of reputational destruction of so-called heretics throughout *Galileo's Middle Finger*, including those incurred by scholars as widely-known as Margaret Mead and E.O. Wilson, and others not as known outside

their own fields, like Napoleon Chagnon, many of whom had built long, respected track records of scientific integrity. She argues the motivation for the personal attacks were not actually based on character, but on the scientist's intellectual position. In these cases, when people, even fellow scientists, did not want to look at the evidence, they attacked the person's character, motives, or background.

Activism

Activism for social justice is embraced by Dreger as an ethical responsibility. Based on her research, Dreger asserts there should be no surgical intervention for children and babies born intersex. She also opposes drug interventions in an attempt to change intersex babies to "normal" male or female sex types through experimental administration of dexamethasone to pregnant women (p. 202). "Pink boys" and "blue girls" would then be able, as adults, to decide if they wish to engage in any bodily changes (p. 267). Dreger was surprised, when, as she reports, she too became a victim of politics and incurred reputational damage related to her research. Dreger provides evidence of the power of preservers of social norms using internet capacity to tear down people who disagree, not based on evidence but, purportedly, rather allowing other motives such as financial gain, self-preservation, or power to dictate research.

The search for justice in science

Discussion about the politicization of science, in fields as far ranging as climate change to intelligent design, is prominent in today's public square (Gauchat, 2012). Willingness to address complex issues and speak the unspeakable is required for intellectual and scientific progress, whatever one's political, religious, or medical views. Allowing ideas to find their own inevitable decline or acceptance as new evidence, supported scientifically, is an essential characteristic of the scientific method.

The best scholars and social justice leaders are ethical, argues Dreger. "Without a just system," she says, "you cannot be free to do science [...] [and] without science, and especially scientific understandings of human behaviors, you cannot know how to create a sustainably just system" (p. 11). Ethical researchers follow the evidence and do their work "without allegiances, conflicts of interests, loyalties, agendas, or relationships that might complicate their thought patterns" (p. 228). Scientists and social justice advocates are urged to follow data and the pursuit of evidence as "the most pressing moral imperative of our time. All of our work as scholars, activists, and citizens of democracy depends on it" (p. 11).

Our main criticism is perhaps Dreger herself becomes too involved with the people she is researching. She also, obviously, has her own vested interest in her personal experience and others are likely to disagree with her perspectives. We cannot investigate the merits of Dreger's arguments or evidence, and there will be a variety of views about her critique of specific examples. To her credit, Dreger invites us as scientists, social scientists, researchers, leaders to question some of her own ethics and medical research practices and reports her own biases and possible weaknesses.

In summary, how do you build an environment where as a researcher or organizational leader you can state the heretical and be supported while working collaboratively and democratically toward a better, more humane and socially just world? Heretical, skeptical, researchers produce and have often produced many of the most innovative and ground breaking ideas and serve as leadership exemplars. Everyone from Galileo Galilei,

Charles Darwin, Rachel Carson, Malcolm X, Martin Luther King, Jr, Sandra Day O'Connor – scientists, environmental scientists, writers, social scientists, justice leaders, and leaders in many fields – have created breakthroughs because of their open-mindedness and willingness to remain open to new possibilities and not exclude unpopular evidence. Organizational leaders and managers, scientists and social scientists seeking to better understand science, democracy, and community are urged to read this important book – Galileo's Middle Finger. To ignore the cautionary message Dreger proposes has the potential to substantially limit the intellectual inquiry necessary to lead and develop organizations which sustain a democracy, not just in the USA but also globally.

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