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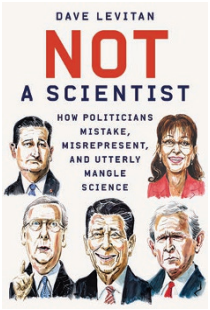


Not a Scientist: How Politicians Mistake, Misrepresent, and Utterly Mangle Science

By Dave Levitan

W.W. NORTON & COMPANY: 2017. 272 PP. US$15.95

The line "I'm not a scientist, but…" first used by Ronald Reagan[1] was called "the dumbest talking point in the history of mankind" by Mike McKenna, a consultant and strategist for the US Republican Party. While the actual phrase itself might have been dropped as a result of McKenna's criticism[2], the tide of utterly mangled scientific discussion points has ebbed very little. In this book, Dave Levitan explores the preponderance of science-related blunders made by politicians. Tackling issues like climate change, the antipathy towards vaccines and the usefulness of seemingly useless knowledge (see the relevant review by Sibylle Anderl in this issue[3]), Levitan carefully deconstructs the exact wording of a given politician, explains the origin of the mangling, and then rectifies the situation — complete with references for readers to prove it for themselves.

The book's theme is reminiscent of Carl Sagan's *The Demon-Haunted World*[4], a classic text that explored common pseudoscientific views and categorized them into classes of logical fallacy. Levitan, however, focuses his effort on politics — more specifically viral-level sound-bites from US political speeches — and categorizes the statements into a set of thirteen rhetorical tactics that have the net result of misleading the public debate on legislative topics. After showing the exact quote and giving context, Levitan tries to find the origin of the mishandled science, and then goes about carefully explaining the actual science and results. In contrast to the pseudoscientific views covered by Sagan that could be considered fringe topics, Levitan's subjects are the very debates that are currently shaping not only the United States, but also the world at large. The reader does not have to use their imagination to see how they could insert the information, well organized by Levitan, into a conversation the next day. In fact, this is encouraged, as Levitan writes: "this playbook of rhetorical and logical errors has given you some ammunition in the fight against scientific ignorance and misinformation — use it!"

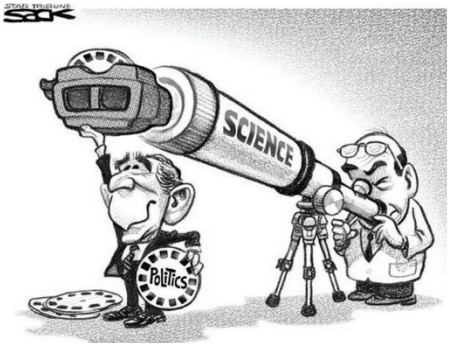
There is a larger issue at play that should concern us as scientists: the poor scientific and technical literacy of the general public. If science literacy were higher, perhaps the voting populace would be more resilient to the claims of their political leaders. To me, it is not just a matter of scientific knowledge, but rather a fundamental misunderstanding of what science, itself, is. Science is presented in classrooms as a set of facts given by an authority figure (teacher) to a student to memorize. But, in the words of Carl Sagan: "Science is more than a body of knowledge; it is a way of thinking."

The process of science is encapsulated into the scientific method, which is reduced to a script-like set of instructions that one follows to produce concrete research results. It is communicated that this script is how science is done; it is clean and the path to a result is clear and objective. Of course, this is an idealization — one that Levitan deconstructs over the course of the book. He vividly demonstrates the nuance in data collection, that scientists can make mistakes, and beautifully constructs a metaphor of the body of science being constructed and reconstructed via layers of studies and discoveries over time.

There is an old adage that knowledge is power. Certainly at one point in human history — long before Googling became a verb and careers were made and broken in 140 characters — it was. Books were expensive to make and even having one was a status symbol. Today, knowledge is cheap to find, cheap to manipulate, and even cheaper to propagate. We have to rethink where the power lies. Instead, critical thinking and analytical reasoning — the powerhouses behind the scientific method — hold more power. Levitan's higher purpose is to train the reader to use these same skills to identify the political statements that need more scrutiny. Being empowered with the skill set necessary to contest the misappropriation of science is, therefore, the most important tool we, as teachers, can give to our students; as speakers, can give to our audience; and as scientists, can pass on through our work. The communication of the scientific process is as important as the communication of the actual results.

There is also a profound need for scientists to be visible. We have to step out of our ivory tower and away from the stereotype it represents. By not training ourselves to communicate our research in the context of the detailed and nuanced ways by which we produce it, we reinforce the simplistic view of science that is then so easily manipulated with the rhetorical devices Levitan describes. This tendency toward oversimplification is then a catalyst for our own outrage. Levitan gives us the arguments that we can use in our classrooms and communities to construct a type of herd immunity to the mangling of science. The lack of scientists' voices in the public debate is similar to "conspicuous silence", the rhetorical device discussed in the last chapter. If we, as scientists, do not express how important our work is ourselves, or stand up when it is mangled, then it is easy to view that lack of action as supporting the non-scientific statements being made.

To close, Levitan's book adds new spin to a debate as old as academia itself: the balance between doing research and communicating it to the public. I think that a healthy scientific life is a balance of both, because our funding largely comes through public support. And, as Levitan writes: "… science doesn't sit by itself, alone in a lab coat, pondering the mysteries of the Universe with little outside influence or consequence. When politicians mistake scientific issues, it can have ripples in our everyday lives." ❐



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REVIEWED BY RACHAEL BEATON

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References

1. Kneeland, D. E. *The New York Times* D14 (10 October 1980).
2. Richert, C. *MPR News* (23 June 2015); http://go.nature.com/2n6E2zE
3. Anderl, S. *Nat. Astron.* **1,** 0119 (2017).
4. Sagan, C. *The Demon-Haunted World* (Ballantine, 1995).