

## Charlatans and Fools

Review of David Robert Grimes: *The Irrational Ape - Why Flawed Logic Puts us all at Risk and How Critical Thinking Can Save the World*, Simon & Schuster, 380 pages, €25

by Brian Trench

Just over a decade after completing his first science degree David Robert Grimes holds affiliations with three universities in Britain and Ireland and has an international reputation as a commentator on science-related issues. He writes regularly for *The Guardian* and *The Irish Times*, and is frequently interviewed on radio and television. He has a strong Twitter presence, advocating vigorously for a scientific approach to public issues, and against pseudo-science, sometimes in long threads of cogently written tweets. He has won awards and international accolades for his campaigning work. With the publication of *The Irrational Ape*, his profile has risen further, as he argues against abuse of statistics and for critical thinking in a dizzying tour of radio and television interviews.

I should say that Grimes is a graduate twice over and now a staff member of Dublin City University, where I plied my trade. I met him once briefly, when I chaired a seminar session at DCU earlier this year, in which he was a speaker.

Grimes speaks and tweets in rapid-fire mode and he writes fluently and prolifically. He fits comfortably into contemporary public discourse, and has a significant role as a public intellectual, sometimes taking unpopular but always solidly argued positions. Yet I was apprehensive about his publisher's claim that this book presents critical thinking as a means to "save the world", also about the title that recalls Desmond Morris's *Naked Ape* of the 1960s, seeking to summarise humanity in a memorable, deprecatory phrase. (Note how describing someone as "human", often "only human", almost inevitably refers to weakness.)

Grimes is a science communicator and in the field of science communication studies there is a current US-led tendency to concentrate all analytical energies on public misunderstandings and misconceptions of the world and of science. This has even been stated by some as "the science communication problem", that there is more scientific information available to more people than ever before, and yet the answers which science offers to so many major public issues are not universally accepted. Climate change and vaccination are the two most immediately available illustrations to support this line of thinking.

This focus on scientific illiteracy and public innumeracy supports a practice of public education through presenting irrefutable packages of evidence and knowledge. But there is much more, fortunately, to the social conversations on and around science. More nuanced science communication research, education and policy development draw attention to social and cultural contexts of communication and to modes of mutual and equitable engagement.

The early chapters of this book are a primer in identifying logical flaws, fallacies, rhetorical sleight-of-hand, bias, abuse of statistics and outright manipulation in the presentation of arguments against evidence produced by science. Grimes illustrates various forms of illogicality in his widely-sourced examples that include issues on which he has campaigned, some well-known historical cases, like "memory of water", the Lysenko affair and Andrew Wakefield – not yet fully consigned to the dustbin of history – but also some striking and less well-known stories.

Grimes writes about a We and an Us that are largely undefined, except in terms of gullibility and vulnerability. He refers to “our collective innumeracy” and says “we are riddled with contradictions” (we should be thankful for that; it is the basis of our literature and much more). In the light of climate change denial and anti-vaccine advocacy he appears to have a strong case – except that, in relation to both of these, there are very many of Us who do not support these positions. The relentless demonstration that We are deficient is eventually tiring because, of course, the author and his kin are not part of Us.

There are also false equivalences, with conspiratorial thinking, delusion and ideology rolled together; we all have ideology, including those who believe science has an answer for everything – that is the ideology of scientism. Among examples of perceived conspiracies, Grimes refers to ‘Big Pharma’, always with capital letters and quote marks. But that phrase is surpassed in antagonism by the title of a thorough, analytical work, *Bad Pharma*, written by Grimes’s kindred spirit Ben Goldacre. Goldacre’s earlier work, *Bad Science*, tackled many of the same targets – notably bogus nutritional advice and homeopathy – as Grimes does.

Through this part of the book, many terms are used from social psychology of several decades ago that is enjoying a current renaissance. Concepts of confirmation bias, motivated reasoning and cognitive dissonance are deployed here, as they are elsewhere to explain the behaviour of the online crowd. What is striking about this social psychology is just how weak a concept of society it embodies. When Grimes says “we are deeply social”, he means that we are deeply influenced negatively by others. Other aspects of being social are weakly or not at all represented, for example, how communities are formed and fall apart, how We also show solidarity and support for each other and how power and authority are won and lost. Where the public is susceptible to fallacy or falsehood, there are people or agencies taking advantage of this. Our rulers are not just “charlatans and fools”, but knowing enough to weaponise ignorance.

The antidotes offered to this dire situation are improved numeracy, and application of the scientific method and critical thinking. As they first appear, these are rather sketchy. The scientific method is a procedure without history or context that delivers reliable knowledge. Critical thinking is the ability to see that there are ways of looking at things other than the received wisdom. For this reader anyway, this generated growing discomfort that we were being short-changed. Surely, critical thinking is also about asking why things are as they are, and why not some other way, and what if they had been or were now different, and what else has happened to make them as they are. And this approach can be applied to the history and performance of science too.

Then comes the final section of the book, after all these accumulated cases of misunderstood science, pseudoscience, even anti-science, and we are taken inside the machine and given some insight into how imperfect science can be. Peer review is seen to be something less than it is cracked up to be. Indeed, there is peer-reviewed literature to show this is the case. John Ioannidis is one of the leading authorities on the topic, having developed models that indicate a majority of published research does not pass the basic test of being reproducible.

This is a contemporary commentary on Karl Popper’s view of science as having reproducibility and falsifiability at its core. Indeed, Grimes is an advocate for Popper’s view and has collaborated directly with Ioannidis, co-authoring a paper on the impacts of the ‘publish or perish’ imperatives that drive science. He is well aware of the pressures on scientists to compromise their integrity. These chapters come as something of a revelation, substituting a more realistic account of science for the rather idealised one relied on earlier.

But the apparent correction, and self-correction, go further. In an Epilogue, Grimes admits he may have been inclined to think that data can win public arguments. Now he sees there

are other elements involved in winning the case for science; these include empathy and compassion. It is clear that Grimes's experience of campaigning for the HPV vaccine has had a personal effect and has brought new learning. Grimes worked closely with the late, and remarkable, Laura Brennan on this campaign. In a footnote in this Epilogue he refers to her death in February 2019 as "recent and raw". I was reading *The Irrational Ape* when the achingly affecting TV documentary on Laura Brennan's last months was broadcast; I see the self-correction in the Epilogue as another #thankyoulaura.

Grimes had assistance from Richard Dawkins on part of this book, and he proudly takes his place among the rationalists and sceptics who draw from their science a way of being in the world. But, as with Dawkins, he is prone to strident over-statement, such as "we have never been more at the mercy of charlatans and fools" – not even in the Middle Ages? He warns of the dangers of reductionism and he may need to heed his own warning.