



## BOOK REVIEW

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Elías, C. (2019). *Science on the Ropes. Decline of Scientific Culture in the Era of Fake News*. Cham, Switzerland: Springer Nature Switzerland AG. 330 pages. [https://doi.org/10.1007/978-3-030-12978-1\\_1](https://doi.org/10.1007/978-3-030-12978-1_1)

Despite being published in 2019, shortly before the emergence of the Covid-19 pandemic, this book predicted many of the media phenomena that we are witnessing today. It describes Western countries as decadent societies, the result of a growing disdain for science. Throughout 330 pages, the author explains the factors that, in his opinion, have caused the decline of reason among the youngest: a journalism unconcerned with the truth; an unscientific religious heritage; politicians who belong to "the letters"; an infinite leisure offer; students who seek immediate gratification and avoid intellectual efforts; teachers with a postmodern philosophical orientation; and an audience society whose cultural values put the emotional-sentimental before the rational, the *pathos* before the *logos*.

Carlos Elías, author of the book, has a degree in chemistry and journalism (that is, he belongs both to "the sciences" and to "the letters") and works as a professor of scientific journalism at the Carlos III University of Madrid. In his beginnings as a chemist, he managed to synthesize new molecules, publishing his results in impact journals such as the *Royal Society of Chemistry* or the *Journal of Inorganic Chemistry*; and as a journalism professional, he worked first in the *Agencia EFE* (Politics section) and then in the newspaper *El Mundo* (responsible for the Science section), before dedicating himself to university research in journalism and scientific communication. This multifaceted experience has allowed him to know and compare both worlds: scientific activity and the media industry. Aware of being a privileged witness and holder of an unusual mixture of scientific and media knowledge, he has written the work

in first person, alternating the narrative of his personal experiences (*ethos* + *pathos*) with well-documented arguments (*logos*) that support his irreverent thesis. The book is entertaining and, thanks to the expertise of its narrator in these topics, has enormous value as a sincere and open exposition of the relationship between science and the media. The analysis of this relationship is key to understand the false image of science among the general public.

The tone of the book is not dialectical. Instead, it emphasizes Manichean oppositions: science *versus* letters, scientists *versus* postmodernists, reason *versus* religion, East *versus* West, United States of America *versus* China, United Kingdom *versus* Spain, past *versus* future. That is why the book leaves no one indifferent. On the one hand, the champions of reason; on the other, irrational thinkers. Naturally, Elías is on the side of the rational thinkers (i.e., "the sciences"), whom he presents as victims. They are victims for three reasons. First, for choosing a very demanding vocation, socially undervalued and with unpredictable results; second, because in science, it is only worth being the first, there is no point in discovering or inventing something that someone else has already done; and third, because those who lead the countries and decide the technoscientific and socioeconomic policies (i.e., politicians) usually belong to "the letters." This last type of victim perspective is important in the author's narrative, because it includes us all, those "of letters" and those "of sciences." Indeed, Elías insists, rightly in my opinion, on an undeniable fact: the anti-scientific postmodern discourse is gaining ground not only in the media, but also in schools and universities, putting (the typical

analytical discourse of) *science on the ropes*. Unlike the human and social sciences, the analytical discourse of the hard sciences is based on the collection and precision of empirical data, as well as the deductive power of mathematical logic. Postmodern teachers and professors, which Elías personifies in the French philosophers of the 20th century (e.g., Baudrillard, Deleuze, Derrida, Foucault, Lacan, Lyotard), in the Frankfurt School (i.e., Adorno, Horkheimer, Marcuse, Habermas) or in the philosophers of science subsequent to logical empiricism (i.e., Popper, Lakatos, Kuhn, Feyerabend), are responsible for the growing irrationality of Western societies, increasingly removed from the ideals and values of Ancient Greece or the French Enlightenment.

From my point of view, Elías' exposition of the four philosophers of science is unfair and hasty. And while acknowledging the excesses of Kuhn and Feyerabend (on the borderline of intellectual obscenity in the case of the latter), it is not less true that both have made relevant contributions to the complex task of thinking about science. For example, the expression *anything goes* by the Austrian physicist-philosopher has been misunderstood in many circles as a defense of relativism. Although it is true that Feyerabend did little to deny these accusations (and, in the process, lower his airs and growing popularity), it is also true that the expression is more subtle than it seems at first sight. Expressed in the language of the philosophy of mind, this controversial statement ("anything goes in science") would mean that we will never be able to invent a machine that develops new science, disruptive science, by itself. Cutting-edge science is a typically human, not computable and not algorithmic, activity. In other words, using a famous distinction made by the philosopher John Searle (*weak AI vs strong AI*), we can say that the *scientific method* exists in a *weak* sense, not in a *strong* sense. This is how I interpret *anything goes*—highlighting the originality of the scientist rather than the instruction manual. There is no single method that dictates in advance what position to take toward a crucial experiment (that is, deciding if the theory has been truly or apparently falsified), because the casuistries are infinite. Sometimes intuition comes into play, a practical know-how or tacit intellectual equipment based on thousands of interactions, interpretations and reinterpretations accumulated by the scientist when manipulating laboratory instruments. To

put it more radically: *it is the scientists, not science, who innovate*. In each discipline there may be a consensus on a certain method to follow, but the good scientist should be free to skip it (in fact, he should skip it) if they think it is necessary. Naturally, when I speak of a scientist, I do not necessarily refer to a single individual, but rather to a network of individuals that make up a scientific group or community. But, true to his excesses, Feyerabend is wrong when he proposes a normative framework based on counter-rules, which, by the way, he does not apply to himself. In my case, even though I sympathize with this interpretation of *anything goes*, I disagree with his scientific relativism. Granted, Kuhn and Feyerabend (but not Popper or Lakatos) have their part to blame for the discredit of science in certain circles, but it is no less true that the misreadings have been rampant.

But let's forget the philosophy of science, a discipline in which Elías is not a specialist, and return to his description of the media phenomenon: newspapers, radio, cinema, television, internet, social networks. In his field, the analysis of the channels that mediate between scientists and ordinary citizens, Elías is unbeatable. Among these channels, the author includes schools and universities, which are losing authority because of the push of fake news on social networks and instant messaging chats, but also due to the low logical-scientific level of schoolteachers and university professors. According to Elías, most of these schoolteachers and university professors have trained in the currents of postmodernity, educated in permanent suspicion of the techno-scientific industry and/or fearful of anything that requires a bit of abstract thought (say, mathematics). The same is applicable to journalists, who are more concerned about audience ratings than seeking and telling the truth. A very topical example is what is happening in the news related to vaccinations against SARS-CoV-2 coronavirus and the associated disease Covid-19. Many citizens currently mistrust science and/or scientists. Elías proposes to eliminate the mediators (i.e., the journalists) between the scientists and the citizens, thus leaving to the scientists themselves the task of disclosing or informing the public.

We have entered a millennium in which algorithms will gain more and more prominence. Knowing how to move in a world of algorithms will require certain skills, where

the resource of logic and mathematics will become an extremely valuable asset. In a world in which "all things are numbers" (Pythagoras), *pathos* and *ethos* will not be enough. It will be necessary to master the *logos*, a skill that, according to Carlos Elías, is beginning to get lost. The book is a manifesto in favor of the fight against the irrational forces that currently dominate the media, political and educational spheres, and an attempt to prevent science and reason from being strangled. In summary, it is a *must read* book if you want to know in depth the media dimension of science today.