

**Cailin O'Connor and James Owen Weatherall.** *The Misinformation Age: How False Beliefs Spread.* Yale University Press 2019. 280 pp. \$26.00 USD (Hardcover ISBN 9780300234015); \$16.00 USD (Paperback ISBN 9780300251852).

Although ‘fake news,’ ‘alternative facts,’ and propaganda are certainly not new phenomena, recent technologies have enabled their greater and more effective spread. Especially in the last few decades, a boom in the use of online social media highly increased the speed and amount of information sharing. These developments have been blamed for a number of social and political upheavals, including the Brexit vote and the 2016 US presidential election, which makes understanding them even more urgent. In *The Misinformation Age*, O'Connor and Weatherall set on to do just that, with a welcome shift in perspective from individual to social. Their central claim is that, to best understand the emergence and spread of false beliefs, we must move beyond individual psychology and failures, and focus on networks of social interaction that influence belief formation, persistence, spread and, ultimately, change.

The proposed approach to belief dynamics starts from the fact that many, if not most, of both our true and false beliefs come from social communication, often from the very same sources. Indeed, there is a trade-off between trusting others and forming true beliefs on the basis of their testimony, and shielding ourselves from false belief by distrusting them. In most situations, however, including scientific research, there is little choice but to trust and rely on others, at least to an extent. The valuable first insight, then, is the recognition of the inevitably social nature of belief, to be further explored in the book. For this, O'Connor and Weatherall's method combines case analysis with modelling, drawing heavily on historical and recent cases of false belief spread, and employing computer simulations and mathematical modelling of epistemic communities.

The book is organized into five parts. After laying out the main ideas in the Introduction and the first chapter, other chapters each follow a structure beginning with an analysis of cases, such as climate change denial, vaccination scepticism, and US presidential election campaigns. The examples are followed by a description of models used to study them, a discussion of their results, and conclusions, often in the form of suggestions for improvement. The book is packed with examples from science and politics and, even though the transitions between cases are sometimes abrupt, it is generally very accessible, clearly written and engaging, with the style at times bordering on journalistic.

The first chapter centres on the notion of truth. After reviewing a number of sceptical positions, from Greek sceptics to Kellyanne Conway, the authors endorse a pragmatic view of truth as evidentially grounded belief. Stressing the relationship between beliefs and choices, they claim that, when making a decision, general scepticism needs to be set aside and the action taken on the basis of the available evidence, rather than waiting for unattainable absolute certainty. Since we care about making successful decisions, we seek to hold true beliefs, understood as those that serve as guides to successful choices. They hold a subjective Bayesian view of belief, according to which beliefs come in degrees measuring how likely we think they are, influenced by evidence we gather and taken into account when making decisions.

In the next chapter, the focus is on the social nature of scientific processes. Here we find a detailed description of the basic model used in the book, a version of the one originally developed by economists Bala and Goyal in 1998. In brief, agents learn by both observing the environment and gathering information from others within their group. On this basis, they choose between two actions that differ in the likelihood of bringing about the desired outcome. In Baya-Goyal models, agents

can very strongly influence each other, which highlights the significance of data-sharing and social interaction even in the complete absence of psychological factors. O'Connor and Weatherall's modifications of the model deliver remarkable results, showing how easily agents can split into polarized groups with different beliefs, and how stable this polarization can be.

The topic of the third chapter is interactions between scientists, policy makers, and propagandists. This is an information-packed chapter that could have easily been made into several, with more discussion of the results and implications. Still, it remains very readable and does not feel rushed. The models are adapted to explore the effects of manipulation. The results show that policy makers' beliefs are generally in line with the scientific consensus, unless a propagandist is added to the mix. O'Connor and Weatherall detail ways in which propagandists can manipulate evidence for their own gain, including biased production of scientific research, selective sharing of scientific results, the so-called industrial selection and straightforward buying off scientists. They show how these strategies can drastically influence policy-makers' beliefs and drive them away from the scientific consensus.

The final chapter zooms out to the population at large, where, they claim, the same mechanisms of belief spread are exhibited. Unlike other chapters, this one focuses more on suggestions for change that the authors believe are implied by the results of their models and analysis. Many of the suggestions are bound to be controversial. They call for a change of many current practices that they believe can foster misinformation, including journalists' focus on reporting novel and surprising stories (even if true) and representing all sides of a discussion. They try to make a distinction between 'science' and 'current or historical events,' the latter of which should be the rightful domain of journalism, while scientific disagreements should not be reported on. When it comes to fake news, the recommendation, alongside algorithmic responses and human editors, is to separate fact checking and reporting 'real stories': primary news sources should focus on the second and leave the first to independent watchdogs. Other ideas include reconsidering the publication of 'spurious' scientific findings, especially in cases where the public good is at stake, and extending current legislative frameworks so that misinformation spread is covered similarly to defamation and libel.

However, a proposal O'Connor and Weatherall, rightly, expect to be the most controversial is to 'reimagine democracy' by recognizing that current institutions such as a free press, publicly funded education and science, free elections and civil rights and liberties may no longer be adequate for 'the goal of realizing democratic ideals.' In this section, they draw heavily on ideas from Phillip Kitcher, and argue against 'vulgar democracy,' which they describe as a 'tyranny of propaganda.' They stress the importance of policy decisions informed by best available evidence, which is 'simply not up for a vote.' Nevertheless, they do recognize that rule by experts is not an option, and instead advocate for a reinvention of our current system, guided by the ideal of 'well-ordered science'—science we would have if decisions were made in ideal deliberation among ideal citizens.

The quality of the work, superior to this point, goes significantly down in the last chapter. In what could be more of a stylistic issue, the tone turns preachy, with suggestions sounding more and more like commandments. Apart from this, the problem seems to be the authors' strong emphasis on listening to the science or identifying the best way to obtain and spread true beliefs, at the price of neglecting other important aspects of life in society. The impression left can be that of glorifying science, while not giving sufficient thought for the inherent value of democracy, autonomy, participation or dignity.

Furthermore, it is important to emphasize that building political and social consensus is not the same as ensuring the spread of true beliefs. Indeed, it could be to an equal extent about values: fake news is often shared because people agree with the sentiment or perceived goal, not because

they are particularly believable. Not to mention that true beliefs in areas such as politics and ethics are a tricky thing, that maybe it is best not to police in the ways discussed in this chapter. None of these points is adequately addressed in the book. Instead, ironically, for all the encouragement to listen to expert opinions, the two philosophers of logic and philosophy of science sketch out serious proposals for ethics and politics that do not appear to be within their domain of expertise. As a result, the chapter often feels superficial, and the discussion hard to take seriously, since it makes little effort to engage with the existing literature in political philosophy and ethics.

Overall, this is an original, creative, and well-written book. While the majority of the book exhibits only minor flaws, the last chapter is weak and negatively reflects on the work as a whole. As is clear from the above, its main issue is that it just glosses over the wider implications and potential negative consequences of the suggestions it proposes. However, clarifying the social and political consequences of their research results is far from the main goal of this work, which is fairly acknowledged toward the end by the authors themselves. The topic, misinformation spread, has been excellently researched and presented, and the book remains a valuable and highly recommended source for anyone interested in the mechanisms of belief spread and change, as well as false belief and misinformation in general.

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