BRAINIACS
BRAIN IMAGING AND COMPUTING SCIENCES

2022 Volume 3
Issue 1 Edoc QC0CD7133

Who Defines the Truth in Science?*

Dietmar Wolfram†

Commentary

Taswell *et al.* [1] provide a thoughtful treatment of the importance of *truth* in science. The concept of what is fact and truth has been debated over many decades (centuries?). Who gets to define what the truth is and is there unity in the perspective of what is the truth in science? We first need a definition of what truth is, which the authors provide in framing their discussion of threats to truth in today's scientific enterprise. This discussion is particularly relevant as we continue to address the COVID-19 pandemic, and where competing views regarding the virus, its transmission, and associated preventions and treatments vie for acceptance by the global scientific community and general public. What is presented as fact by some is false information to others, as the authors outline. These threats to truth in science have been highlighted in the literature for decades [2], [3].

Can one also say that this is the case for science, in general? Is there unity among scientists in what we perceive or promote as fact? Is there one truth? Science philosopher Ian Hacking [4] discussed the idea of the disunities in the sciences, identifying two aspects of unity: singleness (one scientific world, reality, truth) and harmonious integration, noting that different styles of scientific reasoning value each aspect differently, making the idea of one science difficult to define. Harding [5], in referring to these ideas, points to the social and cultural influences on science and *local* knowledge that make an objective truth ideal problematic.

Taswell *et al.* [1] discuss threats to truth in science, including falsehoods and the unintentional or intentional propagation of these falsehoods, summarized with four concepts based on the intentionality of the falsehoods and the willingness of the perpetrators to correct those falsehoods. Their summary provides useful distinctions between different types of false information. In examining the truthfulness or factualness of information we also need to consider the beliefs of the authors, who may feel they are promoting the truth. In the case of anti- and caco-information, presumably nothing will convince the authors to retract their false information. The authors may still sincerely believe in the truthfulness of their findings and conclusions, or they may continue to stubbornly perpetuate information they know to be false.

Who, then, defines the truth in science? In an ideal world, the truth is accepted based on rigorous evidence. As a human endeavor, however, there will always be interpretation of the evidence, which can introduce bias. What is put forward as truth will still need to be interpreted and accepted by the scientific community. Ultimately, it is this community that needs to reach a consensus on what is fact and truth, and if there is room for more than one approximation of the truth. The growing acceptance and implementation of Open Science practices can help in this regard by promoting accountability, transparency, and reproducibility.

Citation

Brainiacs 2022 Volume 3 Issue 1 Edoc QC0CD7133, Pages 1 – 1
Title: "Who Defines the Truth in Science?"
Authors: Dietmar Wolfram
Dates: received 2022-Jan-30, published 2022-Feb-12, endorsed 2022-Feb-11, typeset 2022-Feb-12

Contact: D. Wolfram at University of Wisconsin Milwaukee
URL: www.BrainiacsJournal.org/arc/pub/Wolfram2022TISDIS
PDP: /Nexus/Brainiacs/Wolfram2022TISDIS
DOI: /10.48085/QC0CD7133

References

[1] S. K. Taswell, A. Athreya, M. Akella, *et al.*, "Truth in science," *Brainiacs Journal of Brain Imaging and Computing Sciences*, vol. 2, no. 1, pp. 1–9, Dec. 31, 2021. DOI: 10 . 48085 / M85EC99EE. Online: www . BrainiacsJournal.org/arc/pub/Taswell2021Truth.

[2] W. Broad and N. Wade, *Betrayers of the Truth: Fraud and Deceit in the Halls of Science*. New York: Simon and Schuster, 1982, ISBN: 978-0712602433.

[3] L. McIntyre, *The Scientific Attitude: Defending Science from Denial, Fraud, and Pseudoscience*. Cambridge, Massachusetts: The MIT Press, 2019, ISBN: 978-0262039833.

[4] I. Hacking, "The disunities of the sciences," in *The Disunity of Science: Boundaries, Contexts, and Power*, P. Galison and D. Stump, Eds. 1996, pp. 37–74, ISBN: 978-0804724364.

[5] S. Harding, *Science and Social Inequality: Feminist and Postcolonial Issues*. Urbana: University of Illinois Press, 2006, ISBN: 978-0252073045.

*Document received 2022-Jan-30, published 2022-Feb-12.
†Correspondence to D. Wolfram at University of Wisconsin Milwaukee.