Review of: "Objectivity and Honesty in Science: The case of Light Interference Phenomena"

John Sumpter[1]

1 Brunel University Uxbridge

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The first thing I must say is that I knew extremely little about the transmission of light until I read this article. That is because I am not a physicist; I am an environmental scientist interested in the effects of chemicals on aquatic organisms. However, I do have a long-established interest in integrity in science, an interest I developed because I am concerned about the (poor) quality of much published research.

Despite not being a physicist, or having any knowledge whatsoever about the issue, and most of the people, discussed in this article, I enjoyed a lot reading it. The article is obviously very well researched and equally well written. And I agree completely with the author that the social side of science - a reflection of our characters, of course - is critical to understanding how science is perceived and progresses. How does society decide what is 'right' and what is not? How much do imperfections in our characters prevent us from changing our minds? And admitting that we may previously have been wrong.

What this article demonstrates is that what is often today called the 'Reproducibility Crisis' has a very long history; the problems in science today were present many centuries ago or, put another way, the problems of centuries ago have not been solved. In fact, they are just as common, and just as acrimonious.

Anyone interested in understanding the integrity issues prevalent in science today - as all scientists should be - would be well advised to read the following book:

Richie, S. 2020. Science Fiction: exposing fraud, bias, negligence and hype in science. Penguin Books.

Doing so will demonstrate that the problems in science so clearly presented in this article still exist today. And they do so in all areas of science.

In his book, Richie discusses potential solutions to the reproducibility crisis. I have also made attempts to improve the quality of research in my own field. One such attempt was:

Harries, C.A. et al. 2014. Principles of Sound Ecotoxicology. Environmental Science and Technology 48, 3100-3111.

A number of the basic principles outlined in that paper, such as 'Consider the weight of evidence' and 'Report findings in an unbiased manner' would, had they been applied to the issue that Carole Nahum discusses, probably have helped prevent the bitter disputes that Young became embroiled in over two centuries ago.

Carole Nahum's article also illustrates that scientists had little, or no, formal scientific training two centuries or more ago. That has now changed, and they now do receive training, often gained mainly while doing their Ph.D.'s. Yet, perhaps surprisingly, integrity in science has not improved. Perhaps it has even got worse (think of climate change deniers, or the anti-vaccine lobby). I consider that the training of scientists must be much more rigorous. Some of my thoughts on how scientists could be better trained can be found in the following book:

Johnson, A.C. and Sumpter, J.P. 2019. How to be a better scientist. Routledge.

To return to Nahum's article, please read it and enjoy it. It will open your eyes to how the personal characteristics of scientists - people who are supposed to be objective - influence their perceptions of what is true and what is not. Then keep those thoughts in the front of your mind whenever you read a newly-published scientific paper, or read a news item about a scientific discovery. Remain skeptical of scientists who 'know' that they are always right, as Nahum tells us both Brougham (an Englishman) and Laplace (a Frenchman) thought they were: both were wrong.