



# Bringing Nuance to “the Science” in Public Policy and Science Understanding

Sibel Erduran<sup>1</sup>

Published online: 28 May 2020  
© Springer Nature B.V. 2020

It is now commonplace around the world to witness daily press conferences by political leaders in the company of scientists who provide updates on the COVID-19 pandemic. Countries around the world have convened expert groups to guide the response to the pandemic although the composition of these groups varies. Rather exceptionally in Germany, apart from scientists, philosophers, historians, theologians and jurists have played a major role advising the state of North Rhine-Westphalia on public policy about the pandemic (Matthews 2020). In the UK, the government officials have frequently referred to “the science” represented by a national advisory group of scientists in justifying public health policies (Devlin and Boseley 2020). “The science” has indeed become a valuable commodity in the political arena.

The narrative that commodifies “the science” as a singular endeavour points to a significant oversight of how sub-fields of a particular domain of science—let alone different domains of science—operate. Take, for instance, the following distinctions between public health epidemiology and clinical epidemiology:

Public health epidemiologists and clinical epidemiologists have overlapping methods and expertise; they all seek to improve health by studying populations. Yet to some extent, public health epidemiology and clinical epidemiology are distinct traditions in health care, competing philosophies of scientific knowledge. Public health epidemiology, including infectious disease epidemiology, tends to embrace theory and diversity of data; it is methodologically liberal and pragmatic. Clinical epidemiology, by contrast, tends to champion evidence and quality of data; it is comparatively more methodologically conservative and sceptical (Fuller 2020).

Such distinctions point to how vague and misleading characterisations such as “the science” can be. Furthermore, science in the public domain has now been intertwined with the political decision-making. Such mix of science and politics in the public domain is ripe with tensions. Whereas politicians may shy away from admitting a mistake in public policy about the pandemic as this may be considered a weakness, the ethos of the science is quite the opposite. Science thrives on self-evaluation, correction, revision and sometimes outright abandonment of ideas. However, in the public domain, the revisionary nature of science and the sharp contrast with how politicians might like to position science could potentially lead to scepticism

---

✉ Sibel Erduran  
Sibel.Erduran@education.ox.ac.uk

<sup>1</sup> Department of Education, University of Oxford, 15 Norham Gardens, Oxford OX2 6PY, UK

and paranoia about science. Scepticism, of course, is an important component of science but this sense of scepticism needs to be differentiated from a variation that dismisses science altogether and promotes science denial. The marking of the distinction calls for understanding of nuance about scientific ethos and norms. It also calls for clarifying what questions science can and cannot address.

The contemporary science about the COVID-19 pandemic is essentially “science-in-the-making”, another instance of nuance to note in contrast to science of established facts. Contemporary scientific research on the pandemic raises many questions for science understanding at all levels of the formal as well as informal and non-formal learning sectors. The issues raised by the pandemic point to significant lack in secondary science curricula, of key cognitive objectives such as “probabilistic reasoning” and concepts such as “cost-benefit” and ‘risk’ analysis. The daily presentation of charts on the number of deaths from COVID-19 has placed demands on the public to link scientific and mathematical reasoning. As media channels have been flooded with numerous accounts of fallacious reasoning, we are reminded, again, of the importance of long-standing problems such as pseudoscience as well as science denial. We witness live enactments of correlation fallacies around why the pandemic should not have led to lockdowns around the world when similar numbers of people die from car accidents or smoking. Questions are being raised in the media about the nature of evidence, the modelling of data and limitations of scientific knowledge about COVID-19. The pandemic context has reiterated the importance of promoting students’ understanding of uncertainty in science, acquisition of critical thinking skills, as well as the ability to engage in argumentation and problem-solving. The articles in the current issue of *Science & Education* target some of these fundamental skills along with research on the content of curricula, textbooks, high-stakes assessments and teachers’ views about nature of science.

“The science” in the public domain needs unpacking, articulation and differentiation. Science education is vital in this mission and can potentially bring back nuance to how ‘science’ is characterised for science understanding. However, science education particularly school science in its conventional form, is unlikely to rise up to the challenge given that the complexity of the issues at hand require more than input from science. COVID-19 is not only a scientific problem. It is also a societal problem, appealing to politics and economics among other domains. A cross-curricular approach is needed where students can discuss a range of perspectives on science including how science may compare with other ways of knowing as well as what power and limitations science might possess. A multidisciplinary approach, as advocated by *Science & Education*, is more likely to be effective in improving understanding of science in its societal context. Otfried Höffe, a world authority on Immanuel Kant and advisor to the German state of North Rhine-Westphalia, worked with telecoms executives, business representatives and legal experts to chart a lockdown exit strategy. According to Matthews (2020) during the advisory committee meetings, Höffe’s role was to ask “difficult questions” that might otherwise be overlooked, and in this, Professor Höffe stated that philosophy’s “rather good experience of 2,500 years” was an asset. Bringing nuance to “the science” through critical multidisciplinary appraisal is likely to improve not only public policy making and implementation, but also science understanding for all.

## Compliance with ethical standards

**Conflict of Interest** The authors declare that they have no conflict of interest.

## References

- Devlin, H., & Boseley, S. (2020). Scientists criticise UK government’s ‘following the science’ claim. *The Guardian*, April 23. <https://www.theguardian.com/world/2020/apr/23/scientists-criticise-uk-government-over-following-the-science>. Accessed 25 May 2020.
- Fuller, J. (2020). Models v. evidence. *Boston Review: A political and Literary Forum*, May 5. <http://bostonreview.net/science-nature/jonathan-fuller-models-v-evidence>. Accessed 25 May 2020.
- Matthews, D. (2020). German humanities scholars enlisted to end coronavirus lockdown. *Times Higher Education*, April 22. <http://www.timeshighereducation.com/news/german-humanities-scholars-enlisted-end-coronavirus-lockdown>. Accessed 25 May 2020.

**Publisher’s Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.