With examples like this the volume neatly demonstrates the persuasiveness of Cold War rationality and never falls into the trap of idealizing or demonizing single actors.

Overall, *How Reason Almost Lost Its Mind* succeeds in carving out the specific place of Cold War rationality within the history of science. It gives a convincing display of its roots, idiosyncrasies and 'strange career'. The focus on individual scientists, however, could at times have been broadened a little to make an even stronger case for the persuasiveness of Cold War rationality. Furthermore, glimpses at popular culture are made throughout the book but remain just those. The consideration of phenomena outside the immediate scientific realm – a chapter on representations of science in fiction springs to mind – could have further enriched an already highly fascinating and very well-executed volume.

All in all, with its far-reaching implications, *How Reason Almost Lost Its Mind* can be considered essential reading for those interested in not only the history of science during the Cold War but also the intellectual and cultural history of the second half of the twentieth century in general.

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Harry Collins, **Are We All Scientific Experts Now?** Cambridge: Polity Press, 2014. Pp. vi + 144. ISBN 978-0-7456-8204-4. £9.99 (paperback).
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Harry Collins is an expert on the topic of expertise, a subject about which he has been writing for more than thirty years. His latest book offers an up-to-date taxonomy of the word 'expertise' as he answers the question posed by his book's title: *Are We All Scientific Experts Now?*. What readers might find surprising is the context in which he answers the question – partly autobiographical and partly a historical view of the field of science studies.

The book begins in 1951 with eight-year-old Harry standing underneath the Skylon at the Festival of Britain. It 'was a thrill for a kid to stand directly underneath, thinking that if scientists and engineers were not so clever the massive object would spear down through the top of my head' (p. 1). But things went wrong, recollects Collins, with scientific and technological failures – 'in food science, veterinary science, medicine, economics and weather forecasting' (p. 9) – visible to everyone. If science and technology are so fallible, does that lead to the conclusion that everyone can be a scientific expert? Maybe ordinary citizens really can make scientific and technological decisions as good as or better than those of scientists and technologists – *default expertise*.

By the early 1970s, Collins writes, what he calls 'Wave 2' of science studies had begun. The starting point was Thomas Kuhn's *Structure of Scientific Revolutions* (1962). According to Collins's interpretation, the point that emerges from Kuhn is that since the world changes according to how scientists think about it, the world no longer can be viewed as a fixed point. Wave 1 of science studies took experimental and observational data as unproblematic. Wave 2 argues that we no longer can be sure from experiment and observation what is true and what is false. Scientific knowledge suddenly becomes more like religion and art. A new field called sociology of scientific knowledge (SSK) began to grow. The kid disillusioned about science rightfully claimed a place as one of the founders of the field disillusioned about science.

Decades later, Wave 2 of science studies has recognized the need to 'treat science as special without telling fairy stories about it' (p. 81), which becomes the project of Wave 3, with its focus on the skills, experience and expertise of the practitioners. The spirit of science may be divine but not the scientists. Interestingly, Collins mentions that Kuhn was anticipated by Ludwik Fleck's book *Genesis and Development of a Scientific Fact* (published in German in 1935), at the time relatively unknown. (Fleck's book probably would have remained unknown without Kuhn arranging its translation into English.) Kuhn's idea of scientific revolutions was absent from Fleck's work. Had Fleck been appreciated before Kuhn, then the proper focus for

science studies, as I argue in *The Scientific Attitude* (1987), might have been evolution of scientific thought styles (individual and collective) rather than revolutions, which themselves would have been understood as historical reconstructions. SSK would have been SSP – sociology of scientific practice – from the beginning.

Collins outlines his taxonomy of expertise in a table (Table 2.1). Overall, he divides expertise into three general groups: ubiquitous, specialist and meta. Ubiquitous is the knowledge that we gain from everyday life experience. For better or worse, we all are experts in our own lives. Specialist knowledge is discipline-specific. In the case of science, one can distinguish between passive expertise gained by reading or watching television and active expertise gained by contributing to the field (i.e. as a practising scientist).

In addition, Collins describes an intermediate specialist group with 'interactional expertise' (p. 68). For the most part, this group represents practising scientists with different contributory knowledge and experience interacting with each other, as occurs, for instance, at professional conferences or in the peer-review process. He also places within the interactional group individuals like himself who become embedded with the activist contributors. 'It is the key to much of what we do', he writes (p. 68). He has spent decades 'hanging around with the gravitational-wave physics community' (p. 69) and, as a result, gained specialist expertise on a par with contributory experts. If you doubt the accuracy of that claim, then read Jim Giles's 2006 news piece in *Nature* (442(6)) entitled 'Sociologist fools physics judges'.

The third general group is meta-expertise – expertise about expertise – judging whether what the experts say and do is reasonable based on criteria of diverse types. Similar to ubiquitous expertise, the breadth of meta-expertise encompasses all of life experience – ranging from, at one end of the scale, deciding whether or not to trust the advice of a salesperson or accept the adequacy of a plumbing repair, to, at the other end, deciding whether or not to trust claims made as part of science-policy disputes, such as the risks of genetically modified crops.

A bold, triple vertical line in the table of expertise represents the 'huge gulf' that exists between passive-speciality and interactional-speciality expertise. Using a target diagram (Figure 3.1), Collins explains the basis for this gulf. One finds in the centre of the target a core group of science practitioners in a particular field who are surrounded by outer layers of fellow scientists, funders, policy-makers and the public. The specialist knowledge and discourse of the insiders becomes increasingly opaque to those in the outer layers as their distance from the centre increases. 'We may all be experts in this way or that', Collins concludes, 'but we are not all *scientific* experts now' (p. 131, original emphasis). The tragic outcome of thinking otherwise is illustrated with examples such as South Africa's delay in using AZT to treat HIV and opposition to MMR vaccination in the UK.

By the end of the book, Collins's more nuanced understanding of science in a sense has returned to the appreciative intuition of the eight-year-old:

> Science is inexact, messy, and more often a matter of judgement than calculation. But if we want our judgements about the natural and social worlds made by good, disinterested people, then we should start the zeitgeist moving in the other direction and learn, once more, to elevate science to a special position in our society (p. 132).

I learned a lot about expertise reading *Are We All Scientific Experts Now?*, and even more about Harry Collins.

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