

Plausibility

The influence of plausibility on scientific practice is far deeper than philosophers have recognised. After all, if scientific research is in some ways advancing into the unknown, what frameworks are there for guiding and even evaluating the practice? By definition, innovative science lacks established knowledge in these respects. So there are all sorts of heuristic considerations, which can be generally summed up as plausibility.

One of the great achievements of science in our civilisation is the transformation of criteria of plausibility by its results. Most notably there is the Copernican Revolution. Up to and through the time of Galileo, it was utterly implausible that the earth should be spinning like a top and floating through the heavens. Yet within a couple of generations, common sense had utterly changed in spite of there being no new decisive phenomena or experiences accessible to the public. All sorts of other changes in educated common sense, related to the disenchantment and dehumanisation of the natural world, rendered Copernicus's paradoxes quite plausible to newer generations.

Sometimes the struggle over plausibility takes a very long time to be completed. For biological scientists it is now totally obvious that all biological evolution takes place by design without a designer accomplished by selection without a selector; and (for many) that this process applies to humanity and society as well. But this plausibility is not shared by large sections of the populace, many believing that there is a scientific debate between Darwin and Intelligent Design, or even Creationism. As in the earlier case, the criteria of plausibility are derived only partly from within science; they also depend strongly on the presence or absence of particular religious commitments.

Even within contemporary science, criteria of plausibility can help or hinder the reception of a paradoxical theory. Thus Albert Wegener's theory of continental drift, supported by geography, stratigraphy and paleontology, was ridiculed because of the implausibility of the continents floating around the earth like whipped cream on coffee. But as soon as Plate Tectonics was established, Wegener became a great scientist, posthumously.

There are also some cautionary tales about the application of science to social affairs, being more conditioned by plausibility than the researchers ever realised.

There is a minor paradox in the early history of the Royal Society, that one of its prominent members wrote a book defending the existence of witchcraft. This was Joseph Glanvill, and the book, *Sadducismus Triumphatus* (1681), where he justified English witch trials and provided support for the later ones in Salem, Massachusetts. How could Science be so involved in this most monstrous of superstitions? The explanation lies in the conflicts among plausibilities concerning the natural and the supernatural, which of course had their political overtones. There are two dimensions to the picture, namely the extent of the 'natural' and the existence of irregular events. Radicals of the day were concerned to deny the miracles claimed by the Church as divine. This was done by

expanding the scope of Nature to accomplish strange and unusual effects. They also explained away the phenomena of witchcraft, either by these extra powers of Nature or by the delusions (or false confessions extracted under torture) of supposed witches.

For those concerned to maintain the authority of the Church, the reality of both divine and demonic interventions could be supported by limiting the powers of Nature. It has been argued that this was indeed one of the background elements in the promotion of the atomistic view of the world in the seventeenth century, in spite of its long previous associations with paganism and heresy. During the English Civil War period there had been a lively debate over this 'naturalism', which did not entirely die out during the Restoration. Hence Glanvill's effort was designed to buttress Christian orthodoxy when it was being subverted from several sides. Fortunately for the later reputation of the Royal Society, his was the last such effort, as the criteria of plausibility for natural phenomena were changing rapidly, and the supposed activities of witches were coming to be seen as deluded or ridiculous, at least in the English homeland if not yet in the colonies.

A serious case of the influence of criteria of plausibility, and one which has implications for the present, is what we now call 'eugenics'. Its sources can be identified in the title of *The Origin of Species* itself, where mention is made of 'favoured races'. Within humanity itself, there was no question of which these were; anyone outside the pale of propertied, Protestant, white adult male was patently inferior. The task of a socially responsible science was to establish this rigorously, and then to recommend appropriate social policies. On the scientific side, the endeavour has been well analysed by Steven J. Gould in his classic *The Mismeasure of Man*. On the side of social policy, the implication was not to waste resources on the vain attempt to improve the inferior stocks, but rather to contain their malign influence either by breeding control, natural wastage (believed to the fate of Negroes), or elimination (as of the medically unfit or racially inferior, under the Nazis). Only since the Second World War has the essential inequality of 'races' become implausible, and with it the 'science' of eugenics.

We cannot escape from the dilemmas of judging past scientists whose work was deformed by such prejudicial criteria of plausibility. Especially in cases where the background beliefs were already contested, they cannot be exculpated as simply following the orders dictated by their paradigm. Perhaps they were really victims of their own criterion of plausibility, namely that Science is immune to the effects of prejudice and there is no need for caution in that respect.