THE RHETORIC OF SCIENCE AND WHY IT MATTERS

Michael Ruse

Lizzie Ruse

When I started out as a philosopher of science, rather more than fifty years ago, the rhetoric of science did not exist. At least, it did not exist in philosophical circles. If you read the works of leading figures in the field like Karl Popper and Ernest Nagel, no attention was paid at all methods of convincing hearers – to language or argumentative gambits as such. It was all a matter of what the language said and the arguments proved. Indeed, there was a fair about of presupposition that science would be better off if it could be reduced to pure mathematics, without need of language at all and all arguments were straightforward deductions like you find in Euclidean geometry!

Things have changed dramatically for a number of reasons, a major one of which is probably the development of the history of science. This, and related fields like the sociology of science, brought home vividly the nature of real science as it is done by scientists – as opposed to the idealized science as it is reconstructed by philosophers. And one of the things that one finds when one looks at the science produced by scientists is how important language and its related aspects truly becomes. A scientist producing a piece of work wants to convince his or her readers of the truth of the work and its significance in the overall scheme of things. This means packaging and this means language and strategies of argument and this means rhetoric!

If we take a major piece of science like Charles Darwin's theory of evolution by natural selection, the rhetoric comes across in at least two major ways. First, in the *Origin of Species* we see significant rhetorical use of the language itself, most particularly in Darwin's comfortable and ongoing use of metaphor. Rarely if ever does Darwin introduce a topic cold, as it were. He always wraps it up in language, frequently drawing on analogies or similes or other devices, to reassure and to stimulate. We all know, certainly people in the nineteenth century all knew, about the abilities of farmers and breeders to improve organisms through selective breeding. What more readily then than to speak of nature's processes as "natural selection"? It is thought-provoking and yet at the same time it is familiar and comforting.

«DARWIN IS ALWAYS OFFERING AN ARGUMENT, TRYING TO PUT SOMETHING INTO PLACE»

The second way that Darwin gets to you is through the structure of his discussion. He never offers just one fact after another. He is always offering an argument, trying to put something into place. Now the traditional philosopher of science would agree but say that an argument is an argument, and either Darwin had it right or he had it wrong. But looking at the *Origin* soon shows you that it is not that straightforward. You don't see natural selection in action, at least Darwin didn't think you did. So how was he to convince you? In part, by analogy, from the selection of the breeders to what goes on in nature. In part, by a kind of unifying argument, showing that if you accepted his mechanism of natural selection then subjects like biogeography and systematics and embryology could be fitted into – be made part of – the whole. You don't just have arguments in isolation. You have connected arguments. This is known as a «consilience of inductions», and as Darwin kept pointing out – itself a rhetorical device – it is very popular in other areas of science, particularly physics.

Darwin didn't have to do things in these ways but he did and was very effective in convincing people that evolution really did happen. So here is a case where the rhetoric of science is really important and unless one grasps onto this, one will never truly comprehend the nature of science. In other words, in order to do something right philosophically you have to go out on a limb and look at things that regular philosophers would think quite irrelevant to their ends. For this reason, I think the rhetoric of science is very important and I would urge anyone who wants to gain true understanding of the nature of science to take it very seriously indeed.

Michael Ruse. Lucyle T. Werkmeister Professor of Philosophy. Director of the Program in the History and Philosophy of Science. Florida State University (USA). Member of MÈTODE's scientific board.