

exemplified initially in the work of S. B. Barnes, D. Bloor and M. Mulkay and in books such as B. Latour and S. Woolgar's *Laboratory Life* (Sage, 1979/Princeton, 1986). In this new (largely European) sociology of science, in which scientific knowledge was seen as 'socially constructed', the questions and the methods that Merton's students had pioneered faded from view.

Cole's new book is an attempt at a resurrection. He wants to show the limitations of current constructivist sociology and the need to reintroduce the older perspective. A large part of the book consists of a re-presentation of his own and his colleagues' earlier work (such as the study of peer review), but now as though it were addressing the current scholarly agenda. It is an oddly painful intellectual exercise. "All constructivists", we are told, "argue that the actual cognitive content of the natural sciences can only be understood as an outcome of social processes and as influenced by social variables." The constructivists' 'claim' can then be 'tested' by re-examining data on the extent to which 'social variables' (such as working at a leading university) influence the reception of a piece of scientific work. Few sociologists, still fewer historians of science, will accept the reduction of the complex patterns of behaviour that figure in their own accounts to the standard variables (age, affiliation and so on) that figure in Cole's. The logic of this attempted resurrection rests on implausible interpretations, readings and distinctions.

It may be, Cole grants, that what scientists do in their laboratories is not precisely determined by nature, that it involves all kinds of negotiations and other social processes. But surely, what finds ultimate acceptance within the scientific community is not a matter only of rhetoric or power? Surely nature plays some part; so surely the constructivists are just wrong — the 'constructivists' with whom Cole purports to be debating are a feeble compound, a parody.

There are many whose researches today are directed towards understanding how social processes are implicated in the detail of scientific work and who reject totally the idea that it all boils down to power, rhetoric or negotiation. There are many sociologists of science who believe that their field is ripe for another shift, and that this might well entail looking anew at the institutions, the responsibilities and the careers of scientists. Unfortunately, Cole's attempt at resurrection, which is unconvincing and unfortunate, has done intellectual renewal no service. □

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Earth's twin

David W. Hughes

The Evening Star: Venus Observed. By Henry S. F. Cooper Jr. *Farrar, Straus & Giroux: 1993. Pp. 273. \$22.*

EARTH is 5.4 per cent bigger, 5.1 per cent denser and 23 per cent more massive than Venus. But what are a few per cent to an astronomer? In astronomical circles the planets are nearly as close as they can get to being twins. It is only their distances from the Sun that differentiates them. Venus is closer, and therefore hotter. These things have got out of hand. A 91 per cent increase in the intensity of incident solar radiation has seemingly given Venus a surface temperature of 460 °C and has led to the production of an atmosphere of carbon dioxide that exerts a pressure some 90 times greater than the pressure at the surface of Earth, equivalent to being 2,700 feet deep in the ocean.

If astronauts could survive being both squashed and boiled they would, when standing on Venus, see a dark reddish-brown rocky landscape languishing under a uniformly luminous overcast sky that was occasionally enlivened by a flash of lightning. Only a breath of torrid wind would stir the air.

The big questions concern the evolution of the surface. Has the high temperature and pressure, and the absence of water, given Venus a completely different surface from that of Earth? Has the crust of Venus split into plates? Do these roam about and collide, producing mountain chains and volcanism? Does the venusian volcanism come from another source? Is there any granite or are all the rocks basalt? Is the average age of the surface 500 million years? Has only 10 per cent volcanically resurfaced since then?

Planetary twins seem to be more fascinating than our more disparate siblings and this has led to Venus being visited by more spacecraft than any other planet. Henry Cooper writes about the Magellan mission. This shuttle-launched NASA spacecraft left Earth in May 1989 and on 10 August of that year started to orbit Venus 7.3 times a day, dipping at its lowest to a height of 265 km above the planet's surface. The on-board synthetic aperture radar could resolve surface features to an accuracy of 120 metres. The altimeter added the third dimension. The second cycle of observations produced stereoscopic images.

The Magellan mission has been so suc-

cessful that it will surely spawn many books, but I am convinced that there will be none quite like Cooper's. The Magellan mission has resulted in sheaves of surface images that have been pored over by hundreds of geologists and geophysicists. Pictures are everything to these scientists, but apart from two end-page maps, this book is unillustrated. Time and time again the text gives the impression of a Frenchman trying to describe a spiral staircase with his legs tied together and his hands glued into his pockets.

Cooper has done his best to describe the scientific arguments that raged during the data analysis at the Jet Propulsion Laboratory but, with his qualifications in English

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False-colour image of Venus's Eistla Regio volcanic edifice, made by the Magellan spacecraft in March 1991. The slightly concave summit is 35 km in diameter. Black area has insufficient data.

literature and background on *The New Yorker*, he is reluctant to be partisan or to push forward any of his own ideas. One often comes across sections such as "XXXX agreed with this assessment. I asked him whether YYYY's rigid lithosphere was consistent with the observed plasticity of the crust" — followed by a page or so of quoted response.

The book only really leaps to life when the author discusses scientists rather than science. The anger and the arguments, the petty feuds, the politics of science, the grubbing for grants, and the trifling jealousies make fascinating reading. Cooper has provided some 270 pages of 'fly on the wall' journalism applied to the space-science data-handling business. □

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