Making science for whom?

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Tim Sherratt, 'Making science for whom?', *Antithesis*, vol. 2, no. 2, 1988/9, pp. 13-18.

The title of this book, *Australian Science in the making*, strikes me as somewhat ambiguous. In one sense it seems to indicate an ongoing process of creation, while in the other it appears retrospective, reflecting on the establishment or achievement of science in Australia. The difference is significant, I believe, for the two interpretations suggest disparate views about the nature and development of science. The former implies that a continual process of construction and negotiation is involved in producing what we know as 'science'. Science is a process, or an activity, rather than a discrete entity. There is room, then, in this interpretation, for the work of the social historian or political reformer, who seeks to highlight the cultural roots and social implications of a science. The latter view, however, assumes that there are certain criteria which, when met, enable one to recognize science as 'made' or established. Such criteria would be formulated with reference to some fixed model of what science is, and would thus emphasize fulfilment or attainment of that model. This inherently conservative view clearly imposes limits upon the study of science, and thus upon any discussion of its social role. Nonetheless, I would argue, it is this latter conception of science which is embedded in the structure and much of the content of this volume. This raises important questions about the way science is perceived in Australian society, and indeed about the role of the history of science in maintaining such perceptions.

The idea that science can be 'made' through the achievement of a pre-established goal, would suggest that this book should be concerned with Australia's scientific 'arrival'. This theme fits well with the book's role as a contribution to the 200th anniversary of the European invasion of this continent. It also seems reflected in the nationalistic cover design, which, in red, white and blue, sees the Southern Cross rising over 'Australian Science'. More significantly though, such ideas are reflected in the organization of the text.

Australian Science in the making is a collection of articles relating to the historical development of science in Australia. As the editor notes in his Introduction, this is not intended as a comprehensive coverage of the field, but rather as an examination of certain questions bearing on the central theme of 'Man's [sic] attempts to understand nature in an Australian setting'. Topics range from 'Aboriginal conceptions of the workings of nature' to 'Baron von Mueller: Protege turned patron', 'Science on service, 1939-1945', and 'The shaping of contemporary scientific institutions'. The fifteen articles are arranged in a chronological manner, but, most importantly, they are also divided into three sections: 'Early days', 'Science in a colonial society' and 'Passage to modernity'. These three sections correspond to the three phases in the spread of Western science, proposed by George Basalla in 1967:

> During 'phase 1' the nonscientific society or nation provides a source fo European science…'Phase 2' is marked by a period of colonial science, and 'phase 3' completes the process of transplantation with a struggle to achieve an independent scientific tradition (or culture).[1]

Here we find clear expression of a general developmental scheme for the 'making' of science,

embodying the sort of emphasis on achievement which this volume outwardly manifests. Thus, in its implicit adoption of the Basalla model in its subject headings, this book presents modern science as the result of a victorious ‘struggle’ to create ‘an independent scientific tradition’ – ‘made’ according to a timeless pattern.

Basalla’s ideas are not, however, used without reservation or analysis. The Introduction and a number of the articles either examine the applicability of Basalla’s model, or refer to his more recent Australian critics, Inkster and MacLeod.[2] Indeed, Inkster, with Todd, extends some of his earlier arguments in this volume, examining the nature and importance of institutional support in the development of the Australian ‘scientific enterprise’. Similarly, the Introduction echoes MacLeod’s criticisms of Basalla’s failure ‘to take proper account of the political, economic and social forces that have brought about the changes he describes’. However, although there is a recognition of some of the limitations of Basalla’s model – such that the volume itself can be seen as an attempt to modify the model by further elucidation of the Australian experience – it doesn’t go far enough. The book does not seek to reject Basalla’s conception of science as above national boundaries, and thus ultimately beyond cultural dependence.

This reluctance to fully commit the work to the cultural analysis of science, is demonstrated by the editor’s attempt to justify the use of the term ‘Australian science’. Such a justification is undertaken in deference to the perceived ‘international’ nature of science. Science can, of course, be readily seen as international at certain levels of its social structure – scientists interact with scientists from other countries – though there are very definite limits on such interactions. But the claim would seem to be stronger, that the content of science, by its nature, is international. If this is perceived to be so, then it is only because of our historical situation, which locates us within a particularly invasive scientific tradition. This tradition was created within certain expansionist cultures, and has, through transmission and colonization, been able to establish an ‘international’ network. It is cultural arrogance, rather than epistemological certainty, which encourages our tendency to equate ‘science’ with ‘modern science’ or ‘western science’. What is ‘international’ is hence taken to be universal. The interpretive limitations of this view are demonstrated by the first article in this same volume, by Hiatt and Jones, which indicates the sophistication and power of Aboriginal conceptions of nature.

The notion that science is ‘international’ is therefore ideological, rather than descriptive. It seeks to reinforce and maintain the prestige and authority of western science by detaching it from its cultural context. This book, in accepting the structure of Basalla’s diffusionist model, participates in this ideology, and thus presents western science as having a privileged epistemological position – its knowledge is assumed to be somehow superior to other, culturally specific forms of knowledge.

The use of developmental stages further helps to keep this ideology intact, as shown by the context and meaning of the term ‘colonial science’. This concept was probably first expanded upon by Donald Fleming, who compared the development of science in America, Canada and Australia.[3] Fleming observed that science in these colonial societies was dominated by natural history – by observation and collection, rather than experiment and theory. He sought to explain this in terms of a ‘pioneering psychology’, which was ‘intellectually a psychology of abdication, of making over to Europeans the highest responsibilites in science’.[4] While some aspects of Fleming’s characterization might be challenged by this book, ‘colonial science’ remains as an activity which is defined comparatively, in terms of its relationship with European science. ‘Colonial science’ is understood by examining what it lacks. Informed by, and reinforcing the ideology of internationalism, this approach identifies European science with ‘science’, and thus consigns Australian activities to some level of scientific immaturity.

‘Colonial science’ is thus not ‘science’, but a stage in a developmental model. It is defined in terms of its perceived destination, rather than by its cultural context. If culture plays a part in such investigations of Australian science it is as a hinderance or an obstacle. It is the medium through which the journey towards ‘modern science’ must be made; it influences, but it does not create; it is

incidental, not constitutive. The reluctance to fully locate Australian science culturally is reflected in the use of geography as a causal factor in determining aspects of scientific development. The 'frontier' demands utility, and 'isolation' hampers research – the geography of Australia is seen as acting directly, rather than itself being understood or interpreted through a cultural filter.

The way in which this developmental model establishes claims about the nature of the scientific activity involved, and thus about the sorts of explanations required and analyses permissible, is made obvious by the changes in content which occur as one proceeds through the three sections of *Australian Science in the making*. As we move forward chronologically, the room for cultural factors diminishes; the need for such explanations decreases because we are heading towards 'modern science', which, in itself, requires no explanation. Indeed, the first section, 'Early days', contains some of the most interesting and interpretive work. In particular, the article by Hughes, 'Philosophical travellers at the ends of the earth: Baudin, Peron and the Tasmanians', makes some important comments about the study of anthropology.

The next section, 'Science in a colonial society', considers 'colonial science', which, as I have described, is understood in terms of its connections with European science, rather than its own cultural location. Nonetheless, its status as 'not quite science' allows some interesting studies of power and authority in the colonial-European context. Butcher's 'Gorilla warfare in Melbourne: Halford, Huxley and 'Man's place in nature", and Lucas's 'Baron von Mueller: Protege turned patron', raise some useful questions in this regard.

However, it is in the third section, 'Passage to modernity', that the implications of the developmental schema are fully evident. These articles concern 'modern science', the endpoint of the journey which this volume depicts. In contrast to the previous two sections they are largely descriptive, with little interpretation or analysis. The factors which impinge on 'modern science' are largely internal, such as personalities, funding and institutions. 'Modern science' requires no explanation. Its presumed special status enables it to be seen as completion, or fulfilment. All that remains is to catalogue the ways and means of its success.

An example of this sort of approach is the article by Courtice, 'Research in the medical sciences: The road to national independence'. Indeed the title itself echoes Basalla's 'phase 3'. The article begins:

> One of the outstanding achievements in the history of science in Australia has been the success of the biomedical scientists since the Second World War.

This is a history of progress, which concludes, somewhat predictably: 'Australia's medical scientists had reached the end of the long road to national independence'. It might also be noted that portraits of such 'men of vision',in a montage titled 'Five noted Australian biomedical scientists', illustrate the text in more ways than one.

The developmental model presented in this book, then, is one where the end is predictible, even inevitable. The good guys always win. This is because 'science' itself is endowed with a special self-explanatory status, which conveniently removes any sense of cultural determination. 'Science' can be no other way than it is. People serve only a functional role in its establishment. The only choices people can make are about the means of travel; the road itself is already marked.

This limitation is clearly shown in the last article, by Johnston and Buckley, entitled 'The shaping of contemporary scientific institutions'. This draws upon a continuing thread through the book, which examines the development of science through the growth of an institutional infrastructure. It makes some interesting comments, but ultimately succumbs to a familiar sense of inviolability. It does not map out the social implications of such institutions; it does not suggest options; the bureacracy of science appears as alienating as the science itself. This approach can only lead us to the sort of

science policy which seems to be flourishing in the current political circumstances – policy which does not question existing institutions, but rather seeks to make them more efficient.

The general point is, of course, that in using a model which assumes that science is somehow separable from culture, this book presents a fundamentally conservative view of science and society. The editor notes that science has 'become a powerful social and economic force', but there is no suggestion that political will can curb or direct this force. This volume does not encourage people to analyze the effects of science on their lives, nor does it empower them to make decisions about the role of science in our society. On the contrary, this book reinforces the ideological barriers which separate science from people's conception of themselves as political actors. It shows 'science' as 'made' above culture, just as scientists are established in positions of authority above the people. It presents an elitist view, supporting established systems of power. This might seem hardly suprising since the book is published in association with the Australian Academy of Science, a self-professed scientific elite. It is also interesting to note that three of the seven articles in the third section of the book were written, or co-written, by fellows of the Academy.

This book will undoubtedly be an important resource for future research into the history of Australian science, though at $75 a copy it will hardly find its way onto the student's bookshelf. However, the point I want to make is that any such work embodies ideas about the role of history and the nature of science. These are ultimately poltical questions, and assessed politically, this book presents a conservative model of history and of science. It is clear then that if, as historians of science, we seek to highlight the need for social change, and to present possibilities for doing so, we need to move beyond the sort of analysis that *Australian science in the making* represents.

1. George Basalla, 'The Spread of Western Science', *Science*, *156* (1967), p. 611. [↩]
2. Ian Inkster, 'Scientific Enterprise and the Colonial 'Model': Observations on Australian Experience in Historical Context', *Social Studies of Science*, *15* (1985), p. 677-704; Roy MacLeod, 'On Visiting the 'Moving Metropolis': Reflections on the Architecture of Imperial Science', *Historical Records of Australian Science*, *5*(3) (1982), p. 1-16. [↩]
3. Donald Fleming, 'Science in Australia, Canada, and the United States: Some comparative remarks', *Proceedings of the 10th International Congress of the History of Science, Ithaca, 1962*, Paris 1964, p. 179-96. [↩]
4. *Ibid*, p. 184. [↩]

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