

The history of Australian science

Author : Tim Sherratt

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Date : November 15, 1998

HISTORY OF SCIENCE in Australia is a field intimidated by its subject. Historians have been too slow to examine the local context of knowledge production and use, deferring to scientists and their uncritical catalogues of the past. Historical analysis has given way, too often, to the antiquarian plod or the celebratory frolic.

In nineteenth century Australia, 'progress' was a popular theme whenever the scientifically-inclined paused to reflect on their discipline. By the latter half of the century, science was developing an institutional base with the establishment of universities, societies and government posts. History helped locate this fledgling enterprise within a grand progressive tradition. Catalogues of scientific achievement provided a preface to current endeavours. Obituaries of local workers portrayed them, stuffed and mounted, within a gallery of revered pioneers; there were no Darwins or Newtons amongst them, but their lives were still dedicated to the same glorious ideals. The collecting of history paralleled the collecting of specimens - the main scientific activity within the colonies. Science progressed by the steady accumulation of plants, platypi and people.

By the end of the century, science was changing. Experimental science was beginning to displace natural history; professional scientists were edging amateurs out of the vanguard of progress. With more scientists, more societies, more publications and a never-ending parade of anniversaries to be commemorated, disciplinary and institutional studies became commonplace in the twentieth century - predominantly in scientific journals. As science fractured into increasingly narrow specialisations, history seeped in to fill the cracks, smoothing the narrative flow of scientific progress. Many of these historical efforts were of the 'amateur-antiquarian' variety identified by Michael Hoare ('The History of Australian Science: Prospect and Retrospect', *Newsletter of the Australasian Association for the History and Philosophy of Science*, no. 5, 1974), but some disciplines have been better-served. T.G. Vallance and David Branagan in geology, and R.W.Home in physics, have helped us to understand how disciplinary communities coalesced and changed (e.g. Vallance and Branagan, 'The Earth Sciences: Searching for Geological Order', *The Commonwealth of Science: ANZAAS and the Scientific Enterprise in Australia 1888-1988*, ed. Roy MacLeod, 1988; Home, 'The Beginnings of an Australian Physics Community', *Scientific Colonialism: A Cross-Cultural Comparison*, eds Nathan Reingold and Marc Rothenberg, 1987). Astronomy has been remarkably well-endowed, with detailed institutional histories, *Beyond Southern Skies: Radio Astronomy and the Parkes Telescope* (1992) and *The Creation of the Anglo-Australian Observatory* (1990), as well as a recent general work, *Explorers of the Southern Sky: A History of Australian Astronomy* (1996).

Significantly, much of this work has been undertaken by scientists. Despite the oft-heard protest that scientists look forward, not backward, scientific institutions have been major supporters of historical research in Australia. In 1962, the Australian Academy of Science established the Basser Library as a 'centre for the study of the history of Australian science'. Ann Moyal and Michael Hoare used research positions within the Library to effectively pioneer the field, creating bibliographical resources and outlining many of the broad historiographical questions. The Academy continues to publish the only specialist journal in the field, *Historical Records of Australian Science*. Within this journal, however, scholarly historical articles are juxtaposed with biographical memoirs of deceased Academicians, written almost exclusively by Fellows. The memoirs are far-advanced beyond the taxidermic tributes of the nineteenth century, but the

relationship between the articles and the memoirs is uneasy. Such biographies, as with many disciplinary histories, do not just comment on science past, they help to define science present. Scientists writing history are helping to establish, both within the scientific and broader communities, what makes a scientist and what counts as knowledge. In a powerful sense, the history of science *is* science. This nexus has been largely ignored, robbing the field of much analytical insight.

A lack of access to sources has sometimes been blamed for this historical inertia. But no more. The Australian Science Archives Project (ASAP) provides details of archival and published sources through its online database, Bright Sparcs (<http://www.asap.unimelb.edu.au/bsparcs/>). Few other fields of Australian history are so well served. In addition, some naturalists' journals have been published, and collections of correspondence are appearing. A major project is under way to collect and publish the voluminous correspondence of eminent nineteenth century botanist, Ferdinand Von Mueller. Over the past few decades, tools such as these have been put in place to support an active research community, but where is the activity?

Biographies have appeared for major scientific figures, though there are notable omissions and inadequacies. The ADB has paid increasing attention to scientists over the years, and its articles remain the authoritative sources for many significant workers. Scientist-cum-explorers have fared rather better, as in E.M. Webster's biography of Leichardt, *Whirlwinds in the Plain* (1980). The belated impact of women's history has encouraged efforts to recover the names and deeds of women whose contributions to Australian science has been heretofore overlooked. However, there have been few attempts to move beyond this cataloguing process, to analyse the structures and assumptions that circumscribe participation in the scientific community, though some of the contributors to *On the Edge of Discovery* (1993) do raise such issues. Recent years have brought a mixed bag of scientific biographies with subjects including Macfarlane Burnet, Crosbie Morrison and Ian Clunies Ross, but none really manage to blend the scientist with the person. The dilemma is revealed most clearly in Lyndsay Gardiner's biography, *E.V. Keogh: Soldier, Scientist and Administrator* (1990) - Keogh's scientific work is dealt with separately in an appendix by a scientist. Scientists will remain divided figures as long as biographers are intimidated by science.

Science has been quarantined within Australian history - unfamiliar and forbidding territory for historians - best avoided. W.K. Hancock, however, thought differently when he emphasised the economic significance of William Farrer's wheat breeding heroics (*Australia*, 1930). Ernest Scott likewise showed no qualms when he took it upon himself to lecture the Australian scientific community on their own history ('The History of Australian Science', *Report of ANZAAS*, 1939). In the 1950s and 1960s science seemed to provide healthy fodder for historians exploring the boundaries of their discipline. Geoffrey Blainey recognised its importance within economic history, Geoffrey Serle mapped its development alongside other cultural markers, while George Nadel and Michael Roe began to explore the meanings and uses of science within Australian cultural history. An exciting program of research was unfolding, and yet faltered. Why?

The 1960s and '70s brought a loss of faith in the benevolent bounty of science. Perhaps a growing sense of suspicion served to alienate rather than inspire historians, reinforcing not revealing the mythical 'two cultures' divide. Significantly too, the same period saw the rapid growth of the history of science as a separate discipline. The interests of such historians generally lay in the grand themes of science, such as the Scientific Revolution. Their models and mentors were international, not local. When attention was finally turned towards the history of Australian science, it was within such an international framework; Australia became a case-study in the diffusion of scientific knowledge. International conferences in 1981 (*Scientific Colonialism: A Cross-Cultural Comparison*, 1987) and 1988 (*International Science and National Scientific Identity*, 1991) explored, in a cross-cultural context, the development of the colonial scientific community and its interaction with Europe. Analyses of 'colonial science' extensively modified the crude diffusionist models. Roy MacLeod, for example, in his 'Visiting the Moving Metropolis' (*Historical Records of Australian Science*, 5:3, 1982), offered an alternate taxonomy, that recognised the complex

trajectories of science and imperialism. Nonetheless, conceptions of Australian science have largely remained bound by the 'top-down' perspective assumed by the diffusionist program. Australia was a receiver of knowledge, not a creator of culture. As a consequence too much has been assumed and too little explained. The impact of isolation on the Australian scientific community, for example, has been much commented upon. Blainey's clichéd 'tyranny of distance' is wielded as a causal mechanism without reflection upon the actual meaning of isolation within an Australian setting. Wade Chambers provides some antidote in 'Does Distance Tyrannize Science?' (*International Science and National Scientific Identity*, 1991), exhorting historians to challenge the 'metaphorical power' of 'the myth of "tyrannical distance"'. But his call-to-arms has brought forth few eager combatants.

Important contributions to our understanding of science in Australia have come from outside the mainstream discipline. Bernard Smith's *European Vision and the South Pacific: 1768-1850* (1960) drew attention to the way the land and its inhabitants were perceived by European scientists. Tom Griffiths' *Hunters and Collectors* (1996) revealed how amateur scientists and collectors were involved in the construction of Australia's past. Environmental history has similarly explored how science is involved in the complex relationship between people and environment. 'Australia' is revealed as a participant in this process, not merely a receptacle for transplanted institutions. Greater awareness of indigenous knowledge systems has also highlighted the limitations of diffusionist models. Aboriginal knowledge systems, where they have been examined at all, have tended to suffer from 'first chapter syndrome'. Used as an introduction to the history of Australian science, Aboriginal knowledge is paternalistically portrayed as containing the seeds of our 'modern' understanding. By implication or design, Aboriginal knowledge is embraced as familiar and then discarded as incomplete - as proto-science. Non-indigenous scholars now recognise the power and sophistication of such knowledge systems. Works such as *Singing the Land, Signing the Land* (1989), are beginning to demonstrate how indigenous knowledge stands alongside, not prior to, the western mode of science.

In 1988, Roy MacLeod noted that 'we await works of synthesis... a new Hancock, who will convey and interpret for us the scientific enterprise, from colony to Commonwealth in the making' ('Introduction', *The Commonwealth of Science*, 1988). And beyond. Only Ann Moyal, in a *Bright and Savage Land* (1986), has dared to move towards such a broadly integrative project. But hers is the work of a pioneer - a sketch rather than a detailed analysis. The 1988 Bicentennial prompted a surge in history of science publications. However, the main works, *The Commonwealth of Science* (1988) and *Australian Science in the Making* (ed. R.W. Home, 1988), were collections of articles - hors d'oeuvres only at the history of science banquet. The pickings are sparser still in relation to twentieth century science. R.W. Home has rightly directed attention towards the impact of World War II on the scientific community ('Science on Service', *Australian Science in the Making*, 1988), but D.P. Mellor's volume of the Official History, *The Role of Science and Industry* (1958), remains the most comprehensive account. Boris Schedvin's history of the CSIR, *Shaping Science and Industry* (1987), stands out as a the story of a scientific institution within its political and economic context, and also as a history of Australian science in the early twentieth century. However, the companion volume on the CSIRO has never eventuated.

While historians may have successfully occupied territory on the other side of World War II, scientists largely remain in control of the recent past. Academic interest in modern Australian science has more typically been within the realm of science policy or sociology of science, although with some interesting results. *Life among the scientists* (1989), for example, describes a quasi-anthropological study of the Walter and Eliza Hall Institute for Medical Research. Such studies should give historians cause for reflection. Methodologies and insights drawn from the social studies of science can, and should, inform the practice of historians. In the same way, historians of Australian science need to explore the cultural context of their studies, moving beyond an examination of the culture of science, towards an understanding of science as culture. Our knowledge of science, as well as of Australian history, will greatly benefit.

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