

## Thesis abstract

# Dim and dimmer: the production and diffusion of the natural sciences in Australia between the 1770s and the 2010s

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Abstract of a thesis for a Doctorate of Philosophy submitted to Macquarie University, Sydney, Australia

Despite growing public concerns around socio-scientific problems and the significance of these problems to everyday life, there is a dearth of sociological literature addressing the production and diffusion of the natural sciences in Australia. In particular, critical analyses of scientific knowledge production and diffusion relative to the actions of the state, the market and civil society are largely absent. This thesis sets out to mitigate this situation by contributing a critical historiography of scientific knowledge production and diffusion as it relates to Australia since white settlement. It is anticipated that this work will open up the topic for further academic research and rational debate.

This thesis explores the production and diffusion of scientific knowledge through the lens of social dynamics that have emerged in Australia between the 1770s and the 2010s. The research relies primarily on the theoretical work of Max Weber in order to identify and analyse the conception of *rationality* and its application to social action that is present in the policy and praxis of the natural sciences in Australia. In particular the relationships between the state, the market and civil society are analysed using secondary data drawn from published histories, official documents and the formal policies and practices of the state and the market during this period.

A tripartite analytical model has been created specifically for this thesis and is utilised to trace scientific knowledge production and diffusion through the transformative social processes associated with *instrumentalism*, *bureaucratisation*, *developmentalism*, *environmentalism*, *postmodernism* and *neoliberalism*. Rationality is applied in three ways: as *non-instrumental* science produced to further human understandings of the natural world and to promote the development of civil society; as *pre-instrumental* science produced by the state to in order to develop markets and for other instrumental purposes such as national defence strategies; and as *instrumental* scientific knowledge produced by the participants in the market expressly to enhance their own position in the market.

The research reveals that instrumental rationality has been an enduring concept in the policy and praxis of the natural sciences in Australia. Moreover, this thesis finds that a strong tension is often present between non-instrumental notions of scientific knowledge and those practices that are predominantly instrumental. Through each of the periods studied the state and the market have been close confederates, often working together to realize instrumental outcomes through the knowledge produced by natural science. In particular, administrative and economic ends are seen to be primary; ends associated with more normative intentions, such as the

nurturing of civil society, have been regularly overlooked in favour of strictly instrumental aspirations. This continuing instrumentality has altered the relationships between the state, the market and civil society during each period studied. On the current trajectory, the policy and praxis of the natural sciences in Australia may yet begin to compromise the sovereignty of that nation state and the authority of its citizenry.

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