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## Gravity, gardens and gifts: Knowledge economies and Machian thought across disciplinary space and time

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This paper explores several historical and methodological implications of the unusually thorough-going cross disciplinary arguments that Ernst Mach developed as a result of his work between physics, physiology and psychology from the 1860s through the 1880s, by examining legacies of Mach's approach in the development of theories of gravity and economic anthropology by Albert Einstein and Bronislaw Malinowski. Historically it is helpful to recognise that Mach's famous critiques of absolute time, space and ego were initiated in psychophysical research projects at the intersections of physics, physiology and psychology; these point to the widespread significance of relations between medicine and physics in studies of perception in the mid nineteenth century. Although Mach's emphasis on the economy of thought has usually been understood primarily as a form of anti-metaphysical empiricism when assessed with the interplay of theory and experiment in early twentieth century physics in mind, I will argue that rather than merely stamping out vermin (as Einstein put it), Mach's unusually broad aim to provide a philosophy fit for the whole of science helped his work bear fruit in social thought as well as physics. To develop an appreciation of the methodological implications of Mach's unusual interdisciplinary aims, I will trace legacies of Mach's approach in the work of Einstein, whose imagination was shaped by Mach's thought experiments, but also in Malinowski's argument that Australian aboriginal Intichiuma ceremonies as well as Trobriand Islanders'garden work and Kula ring of ceremonial exchange should be understood as economic relations, even if they were not money based. My reflections on the methodological implications of these historical relationships will draw on Jim Secord's and Warwick Anderson's accounts of knowledge in transit and post-colonial exchange, arguing that we need to track subtle but significant interrelations between circulatory practices and the caesurae consequent on power imbalances, in order to understand the specific challenges that interdisciplinary practitioners face.

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