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BOOK REVIEW

# Getting physical: Empiricism's medical History

## Charles T. Wolfe and Ofer Gal (eds): The body as object and instrument of knowledge: Embodied empiricism in early modern science. Dordrecht: Springer, 2010, x+349pp, €139.95 HB

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The Koyréan view of the Scientific Revolution as a conceptual change in the mathematical/astronomical sciences has cast a long shadow. The medical sciences, which had a much wider presence in the larger society, still tend to be placed in the outer orbit of the historiography of the Scientific Revolution which predominately revolves around the astronomical/mathematical sciences. Harvey's discovery of the circulation of the blood might be seen as having some analogies with the shift to the Copernican heliocentric cosmology but early modern medicine as a whole tends to be viewed as lacking the theoretical elegance of the mathematical sciences. It is the aim of this wide-ranging collection of essays to revise such a view by looking again at the character of empiricism and its close links with the medical sciences.

As Wolfe and Gal remind us forcibly in their introduction, the roots of empiricism are intertwined with the medical sciences. Such historical origins can be important in understanding the character and extent of empiricism. In considering Kant's objection to empiricism as constituting a form of Cartesian dualism, for example, Anik Waldow points to the way in which the origins of empiricism derive from the Galenic school which developed forms of medicine which emphasised the treatment of symptoms rather than seeking to deal with the theoretical underpinnings of disease. Such attention to the significance of the medical origins of empiricism has been overshadowed in the historiography of the early scientific movement. The Baconian-informed early Royal Society has been regarded as the cradle of a scientific empiricism which was linked to forms of experiment and firsthand observation which had no specifically medical resonances. The fact that many of the members of the early Royal Society were drawn from the medical profession has not been given the prominence or significance it merits. Charles Wolfe's stimulating final chapter, which serves to draw together some of the major themes of the collection, reiterates the importance of the medical origins of

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empiricism. True, after it originated in the world of medicine, empiricism was to take different paths: medical empiricism did not readily conform to the canons of proof and validation followed by the experimentalists. As a consequence, argues Wolfe, medical empiricism was more likely to merge with vitalistic forms of explanation.

The associations between empiricism and the study of the body provide a number of levels of possible explanation and analysis as the evocative subtitle of the collection suggests with the layers of meaning associated with the phrase "embodied empiricism". There is, to begin with, the issues directly associated with the study of the body itself which are addressed in part one of the collection, "The Body as Object". The chapters here, in their different ways, reinforce the strong medical overtones of empiricism. Hal Cook emphasises the increasing historiographical importance of practices rather than concepts, an approach that accords particular importance to the long-established techniques and procedures of medicine and their seventeenth-century developments which is his theme. It is a message reinforced by Cynthia Klestinec's chapter with its discussion of the way in which the study of anatomy at the University of Padua in the sixteenth century "was recast as a natural philosophical enterprise" (53). Empiricism was, too, an attitude of mind which owed something to the way in which the evidence of the senses was given greater respect in early modern Europe, a transformation which Alan Salter illustrates by the parallels between the literature of the period and Harvey's approach to data derived from the senses. Medicine was closely linked with that strongly empirical science, chymistry, as Victor Botantza draws out in his chapter on the early Parisian Academy of Sciences and Peter Anstey in his on the chymical character of Locke's view of medicine with its strong debt to Boyle.

Another variant of "embodied empiricism" was "The Body as an Instrument," the title of Part II. For Kepler and Galileo, as Ofer Gal and Raz Chen-Morris show from their original vantage point on early empirical methods, the body, and particularly the human eye, was a very fallible instrument which was best replaced by man-made devices like the telescope. Guido Gaglioni's draws on an analysis of Bacon's *Sylva Sylavarum* and its analogies between human appetites and the behaviour of matter to question Francis Bacon's claims to be the "father of empiricism". The impact of societies which were new to Europeans is considered by Justin Smith. This provides a novel stance on attitudes to the body by looking at the way in which the Baconian John Bulwer viewed such meddling with nature as the use of tattoos with disapproval. One of the most essential functions of human beings as instruments for scientific research was in recording data through memory. For Richard Yeo, attitudes to memory in the work of Boyle and his larger circle provide a means of exploring the character of individual experience in both its moral and empirical dimensions. The role of sensations and feelings was a subject which continued to be explored for many centuries as Snait Gissis brings out in his study of the way in which Lamarck's study of such issues can be said to have been conducted in a proto-evolutionary framework.

Yet another variation on the theme is a study of "Embodied Minds" (Part III). Much of this section is given over to exploring the traditions of philosophical empiricism which derive from Locke's insistence that our minds are entirely shaped

by our experiences. John Sutton addresses the way in which major thinkers in this tradition dealt with what might be called the stream of consciousness. Mind-wandering is something which greatly interests present-day cognitive scientists but, as this essay establishes, it was a topic which was regarded as significant by the philosophical founders of the British empiricist tradition. Locke looms large again in Lisa Shapiro's following chapter which deals with the historical roots of another major issue in cognitive science, "the Binding Problem": the way in which information derived from different sense modalities is bound together. The awakening statue, one of the most familiar Enlightenment metaphors for explaining the way in which the human mind came to function, is the subject of Tobias Cheung's chapter which deals with this familiar topos in the less familiar context of the work of Charles Bonnet.

By grouping the essays around these three different major dimensions of the study of the body and the emergence of empiricism this is a collection, then, which makes us think anew about the origins of the methods and mentality of the scientific movement in its formative centuries. As it illustrates, the emphasis on changes in cosmology, important though they were, needs to be balanced by changes in thinking which were fostered by a widely disseminated medical tradition. Long before Bacon and the early Royal Society, it was a tradition which had emphasised the need for close observation and theoretical caution. Such linkages between empiricism and the study of the body brought with it speculation on the extent to which the apparatus of the human senses and memory could arrive at reliable data while also helping to stimulate philosophical speculation on the way in which the human mind worked. In all these ways, this collection places the human body back squarely in our mapping of the development of early modern science.