

(writing and/or eating are the most likely targets of change) while other behaviours remain as left-handed. Some switch attempts are self-initiated and can be left-to-right as well as right-to-left. Kushner cites Facebook posts by left-handers as ongoing evidence of discrimination against left-handers living in a right-sided world. Such negative posts exist but they are balanced by an equal number of Facebook comments celebrating the unique experience of being a member of the left-handed minority. Not all handedness switching is forced and most left-handers do not regard themselves as victims of sidedness discrimination.

Kushner's third thesis is 'that toleration of left-handedness serves as a barometer of wider cultural toleration and permissiveness'. Although Kushner does not mention this research in his book, there have been attempts to look at the relationship between broad societal norms and rates of left-handedness. Research on the Power Distance Index (PDI) maintains that countries valuing conformity to authority and the majority norm should have lower rates of left-handedness than countries that value individuality and independence. Countries are rated on a number of dimensions and given a PDI numerical score. Low PDI scoring countries value individuality while countries with high PDI scores value conformity. Rates of left-handedness across countries show a rough inverse relationship with PDI scores. This result confirms Kushner's notion that fluctuations in rates of left-handedness can be affected by broader societal values within a country.

As a final comment, Kushner asserts that handedness side should no longer be used as a marker for language lateralisation. Neural imaging techniques can determine whether the right or the left hemisphere is the primary site of language processing. Surprisingly, given this position, Kushner devotes an entire chapter attempting to form a causal link between rightward conversions of left-handedness and stuttering. If handedness is independent of language lateralisation, handedness switching should also be a process independent of language disruptions. Kushner's inconsistent reasoning in this section of the book stands in contrast to his otherwise meticulous methodological and historical analysis. Despite this minor flaw, Kushner's book is a valuable addition to the research literature on left-handedness. His historical perspective is particularly valuable as is his dissection of the methodological flaws that have plagued research into left-handedness for close on 200 years.

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Fabio Zampieri, *Il metodo anatomico-clinico fra meccanicismo ed empirismo: Marcello Malpighi, Antonio Maria Valsalva e Giovanni Battista Morgagni* (Roma: 'L'Erma' di Bretschneider, 2016), pp. 434, €150, hardback, ISBN: 9788891311733.

This consistent book has several strengths. The first is Zampieri's effort to reunite three prominent scholars of the early modern period, Marcello Malpighi (1628–94), Antonio Maria Valsalva (1666–1723), and Giovanni Battista Morgagni (1682–1771), who greatly contributed to the birth of modern anatomy and clinical pathology. The second is Zampieri's encyclopaedic knowledge of Italian and European early modern medicine, as he also explores lesser-known medical areas and topics. The third is Zampieri's synthesis of two centuries' worth of discoveries, debates and scientific transformations, connecting medical knowledge to diverse disciplines, including natural history and

natural philosophy. The book thus offers an outstanding and rich roadmap to medical science in the seventeenth and eighteenth centuries.

In Chapter 1, Zampieri brilliantly explores the status of medicine in the early modern period. The key to this reconstruction is the debate among neoteric, empirical and ancient medicine. He identifies two origins for this debate. The first is its efficient cause, so to speak, as medicine languished within a traditional methodology grounded in qualitative and finalistic analysis during the middle ages (p. 28). New discoveries achieved during the Renaissance put this medical approach in crisis. The second is its formal cause, as Zampieri uncovers a similar debate in ancient medicine as well. Despite Galen's important synthesis, the contrapositions of antiquity were not solved, but covered again in the early modern period (pp. 40–1). A crucial point of novelty was the mechanical approach to medicine, mostly (though not exclusively) introduced by the work of Galilei and Descartes. This mechanical approach fuelled neoteric medicine and produced anatomical studies that helped define diseases and develop cures. Both this debate and the mechanical approach furthered Morgagni's anatomical-clinical method, which resulted in a synthesis of the mechanical (purely anatomical) approach and empiricism or clinical medicine.

Chapters 2 and 3 deal with Malpighi and Valsalva, the predecessors of Morgagni, whose work Zampieri analyses in the light of their attempts to enhance mechanical approaches and anatomy in the debate previously described. Zampieri highlights the fact that Malpighi thought mechanical models could help one to understand organs, describe the causal chain, and comprehend both physiology and physiopathology (p. 72). From this perspective, the nature of malady was of particular help to us in understanding the normal state of the body. Both Galilei and Descartes were sources for Malpighi, though he reinterpreted Descartes' heuristic model (p. 80). Zampieri analyses three situations to detail Malpighi's position. The first is Domenico Guglielmini's reception of Malpighi. The second is the debate on a number of theses written by Michele Lipari, a physician of Messina, who supported Galenic medicine against Malpighi's innovations (pp. 99–102). The third is the debate with Giovanni Girolamo Sbaraglia, who criticised neoteric medicine and the uses of anatomy in favour of empiricism or practical medicine. Zampieri describes concisely the diverse support for these positions (even bizarre ones, like Gideon Harvey who compared anatomy to cannibalism, p. 111), which cast a shadow on Malpighi's medicine, but also brilliantly illuminates the latter's interpretation (pp. 137–40). The result is well known: Malpighi is one of the fathers of modern medicine.

In the analysis of the work of Valsalva, posthumously published by Morgagni, Zampieri detects the presence of several methodological features that Valsalva derived from Malpighi. These are: (1) the uses of mechanical models to explain anatomy (on p. 156, a table of measurements of the semicircular canals of the ear exemplifies this connection) and the combination of the diverse parts of the body; (2) the role of detailed anatomy; (3) the microcosm of nature; (4) the conceptualisation of disease as a natural experiment to confirm the normal structure and function of the body; and (5) the application of anatomy to clinical examination and surgery.

Chapter 4 forms a compelling section of the book, the medicine of Morgagni. Zampieri divides this chapter into four subsections, in which he connects Morgagni's method outlined in *De sedibus et causis morborum* with Malpighi and Valsalva, but also shows its innovations in the debate between the mechanical and clinical approaches. Following his teachers, Morgagni reinterpreted humours as produced by glands (p. 187) and connected anatomy, clinical examination and surgery (p. 190). Yet, Morgagni combined innovative aspects with traditional features (p. 196), which gave his *De sedibus* enormous

success in Europe. In this regard, Zampieri detects Morgagni's connection with ancient authorities, Hippocrates, Galen, Celsus, and Aretaeus of Cappadocia (p. 204), with early modern physicians, such as William Harvey and Théophile Bonet (p. 210), and then with early modern (natural) philosophers, such as Robert Boyle (pp. 228–30), and, in the case of Morgagni's understanding of causation, John Locke (p. 286). Within this complex matrix of references, *De sedibus et causis morborum* is revealed as an innovative work, in both its title (p. 234) and contents. Zampieri especially deals with the role of comparison in series (p. 238), the innovative uses of mechanical models in the discussion of diseases (p. 248), the observation of polyps in the heart, aneurisms and syphilis (p. 270), the definition of causation (pp. 281–3), and the limits to the uses of the microscope (p. 297). In the last subsection, Zampieri focuses on the role of conjectures and hypotheses developed by Morgagni. The latter's conception of reality is more undetermined than mechanists claimed (p. 320).

Nevertheless, Morgagni's position consists of a strong connection between mechanical and empirical approaches. Indeed, while he developed a conjectural or provisory mechanical approach, he related mechanical models to clinical and anatomical phenomena. Accordingly, a new methodological synthesis of true knowledge surfaced (p. 326). Yet, this is Zampieri's thesis: Morgagni's success resided in a fruitful methodological combination that has its origin in the work of Malpighi and Valsava, as well as in the exceptional condition of the study of medicine at Padua during the early modern period (pp. 349–90).

Zampieri's book, which is of paramount importance for both historians of medicine and physicians (p. 401), lays bare with rigour and exactitude a crucial juncture in early modern medical knowledge, which would otherwise be challenging to comprehend.

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Stephen T. Casper and **Delia Gavrus** (eds), *The History of the Brain and Mind Sciences: Technique, Technology, Therapy* (New York: University of Rochester Press, 2017), pp. i + 310, £95.00, hardback, ISBN: 9781580465953.

Stephen T. Casper and Delia Gavrus have two ambitions for their volume, *The History of the Brain and Mind Sciences: Technique, Technology, Therapy*. The first is to offer a critical reflection on how the mind and brain sciences have been shaped over the past two centuries by various medical concepts, practices and objects. What is most curious about the volume, however, is its second aim, for Casper and Gavrus hope that *The History of the Brain and Mind Sciences* becomes a 'sophisticated and versatile teaching tool for graduate and senior undergraduate seminars' (p. 1). Yet such an ambition feels too modest – unusual, even – for a collection that contains such high-quality, original contributions.

The first three chapters of *The History of the Brain and Mind Sciences* offer rich, generous commentaries on the place of technique, technology or therapy in the neurosciences. The first chapter, by L. Stephen Jacyna, focuses on the Menagerie in the Jardin des Plantes in post-revolutionary France, which was used as a site for the study of animals. Jacyna makes recourse to Foucault and Latour to outline the workings of the Menagerie's 'truth machine' – the actors and observational techniques that constituted animal behaviour as a focus of study (and which then worked to generate knowledge of animal intelligence and, later, human behaviour). The chapter following,