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The collapse of mechanism and the rise of sensibility: science and the shaping of modernity, 1680–1760

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BOOK REVIEW

The collapse of mechanism and the rise of sensibility: science and the shaping of modernity, 1680–1760, by Stephen Gaukroger, Oxford, Oxford University Press, 2010, ix + 505 pp., $65.00 (cloth), ISBN 978-0-19-959493-1

The present volume is the second of Stephen Gaukroger's projected six-volume series entitled *Science and the Shaping of Modernity. Collapse* takes up the cue from the first book, *The Emergence of a Scientific Culture*, in discussing the changing fortunes and models of natural philosophy in the early Enlightenment (1680–1760) and how these came to be a model for the cognitive values of the West. It is a study of science as generator of cognitive values or cognitive norms, which deftly overcomes many classic oppositions between internalist and externalist approaches. Gaukroger presents the rationale behind the series as follows:

> Understanding the emergence of a scientific culture – one in which cognitive values generally are modelled on, or subordinated to, scientific ones – is (…) one of the foremost historical and philosophical problems with which we are now confronted in understanding our own culture. (1)

The study of the "assimilation of all cognitive values to scientific ones" (11) brings together natural philosophy, physicotheology but also institutional factors such as the emergence of the *persona* of the natural philosopher (a topic on which Gaukroger is a noted authority), the role of the Académie des Sciences in France with Fontenelle, and ultimately the public value of scientific knowledge (*e.g.*, with Voltaire). In this story, natural philosophy is less a disembodied set of theories or a material set of practices, and more of a "calling".

Collapse is divided into five parts comprising 12 chapters, a short introduction and an even shorter conclusion (one page). Gaukroger begins with the "collapse of mechanism", arguing that at the end of the seventeenth century there wasn't one uniform model of natural philosophy but a turmoil of different and competing models for understanding natural phenomena; in addition, when natural philosophy came to provide a cognitive norm it was not mechanism, but instead *sensibility*, which arose in the first half of the eighteenth century. Why should mechanism have collapsed? Notably, its ontological limitations as faced with life and chemistry: "A mechanics that was unable to account for physical phenomena such as electricity and chemistry was hardly going to be able to provide a basis for understanding animate bodies" (355).

Gaukroger steers a middle path between a decontextualized narrative of triumphant naturalization and one of relativistic contextualism. Hume's approach to natural religion plays an important role in the later sections of the book (along with other figures presented as post-Lockean such as Diderot), as an illustration of the process whereby naturalization, instead of strengthening the explanatory unity of natural philosophy, instead weakens it, leading to an anti-foundationalism and a promotion of sensibility instead of reason (443–444), in what Gaukroger nicely calls a shift in knowledge-gathering enterprises: "Hume raises the fundamental question, inherent in the eighteenth-century sensibility tradition, whether understanding of the world and our place in it is exhausted by reason, and he answers that it is not" (445). Ultimately Humean natural history is destructive of the pure natural philosophy model (*i.e.*, as model of understanding)

(452). In the interim, a complex interrelation between natural philosophy, natural history and Christian natural theology had emerged (30), but ultimately one in which the latter was reduced to its "cognitive content"; "to a set of explicit beliefs whose content could be compared with beliefs of different provenance" (42).

Gaukroger identifies another "master narrative" which is about the apparent divide between *rationalism* and *empiricism*, a divide which Gaukroger regards as artificial and which he traces back to Kantian-inspired historiography of the mid-nineteenth century claiming that epistemology was the core philosophical discipline thus neglecting the natural–philosophical enquiries made by the so-called "rationalists" Descartes, Spinoza and Leibniz (155–157). Gaukroger contributes notably to rolling back this image which today haunts history of philosophy classrooms all over the world. In order to do so, he shifts the focus to what he terms vertical and horizontal models of explanations and especially to Locke's natural-philosophy driven epistemology and the reception thereof. A vertical model of explanation, mechanism being the prime example, seeks causes on another level than the effects produced "because causes are always more fundamental" (153) – think of the more fundamental corpuscles producing the natural phenomena that we see – while a horizontal model of explanation sees cause and effects as being on the same level and as being related to each other on this level.

Following an analysis of Leibniz' integration of matter theory and mechanics (in which Gaukroger does not discuss Leibniz' own interests in microscopy as investigated by Justin E. H. Smith, Catherine Wilson and François Duchesneau, which could have contributed to his argument that Leibniz employs a vertical form of argumentation), Gaukroger presents an original analysis of Locke's epistemology: Locke was not a defender of the micro-corpuscularian programme as envisioned by Descartes, Hobbes, Gassendi et al. but rather sought to destabilize the natural–philosophical priority given to explanations rooted in the microscopic phenomenal level. Thus Draft A of the *Essay* should be read as defending Sydenham's position on medical explanations, which sought to understand, explain and cure diseases not in a holist, person-bound way, but by describing diseases themselves. In Gaukroger's reading, Sydenham developed a horizontal scheme of explanation that tried to understand disease and its diffusion symptomatologically, a medical methodology which Locke then defended epistemologically in his *Essay* (159–163). Explanations should, and here Locke sees himself partnering with Boyle, only be found on the level of the observable. For Gaukroger, Locke's epistemology breaks with the tradition of looking for explanations deeper down, a tradition which Descartes continued from Aristotelian natural philosophy, focussing instead on the sensible, the phenomenon, the experiment, the non-reductive and the facts (184).

This is, again, a break with mechanism – but there are different ways of answering the question, *when* did mechanism end, depending of course on the definition thereof. Minsoo Kang, in his elegant history of automata, *Sublime dreams of living machines*, suggests it is with La Mettrie's *L'Homme-Machine*,[1] which despite its title, is not a mechanistic work. But it must have ended much earlier, if we consider critiques of mechanism from such otherwise "friendly" actors as Steno and Boerhaave (in a sense more relevant than more polemical, more oppositional onslaughts from figures like Bordeu from the vitalist side of the playing field, discussed in Chapter 11). Indeed, it is possible to tell a story more sympathetic to mechanism and its evolving forms, but that would require less conceptual rigour than Gaukroger's narrative. (Consider the case of Boyle, whose status is unclear in this narrative: is he an intermediary, an undecided figure, or perhaps a problem for the narrative? – which by no means implies that the narrative has to fail! Maybe he is also evidence that mechanism didn't just collapse but was slowly transformed into something else.)

The collapse of mechanism in Gaukroger's narrative is what allows him to focus on sensibility. At the level of natural philosophy, he first gives the early examples of Ray's botanical

taxonomy of the 1690s, Gray's discovery of electrical conductivity, and Geoffroy's table of chemical affinities (chapter 5). These investigations into botany, electricity and chemistry shared a focus on effects and their interrelatedness describing their organization instead of referring the phenomena to the micro-corpuscular level. Following this, Gaukroger introduces "another variable": the culture of the Académie des Sciences (229). In France, Locke-inspired Newtonianism became hugely influential through the *Encyclopédie* and Voltaire which, as noted above, also contributed to shape a new *persona*, the *philosophe*. The French *philosophe*, the best example being Diderot, transformed the practice of experimentalism into the philosophical notion of *sensibility*, the "prime importance" of which lay, Gaukroger asserts with a nod to Jessica Riskin,[2] "in the fact that it was the point of contact between the natural and the emerging 'moral' sciences" (393).

As regards natural history proper, Gaukroger analyses the positions of Maupertuis, Needham and Buffon, casting the latter as bringing about a "move from […] a timeless or atemporal conception of natural philosophy […] to a developmental conception" (383). Naturalization became a dominant explanatory strategy. Yet naturalization in the earlier mechanistic sense had broken down. As La Mettrie put it in his *Système d'Epicure*: the more one emphasizes Reason, the closer one gets to abandoning it altogether. (As a side point, Gaukroger's claim about Buffon being mainly interested in "macroscopic" characteristics of animals such as physiology, care of their young, instincts, habits, etc. (381) is debatable, for, as he points out himself (363–365), Buffon also was quite committed to the "organic molecule", an idea owing a lot to Leibniz. Gaukroger argues that Buffon's focus on appearances makes up for this (365), but it seems that sometimes the picture is a bit more complex than the narrative allows it to be.)

As regards the mental or "moral" realm, Gaukroger stresses the great transition of the mid-eighteenth century in which sensibility replaces "reason" as a core cognitive feature: "Sensibility is not an added extra: it is what underlies our cognitive life" (393). This marks an increasing emphasis on "affectivity": Gaukroger nicely suggests that in Diderot and Condillac,

> questions of cognition are removed from the confines of a narrowly conceived, sceptically driven epistemology, so that affective states and moral questions are caught up in the enquiry. What happens, in effect, is that affective states come to underpin cognitive ones. (409)

The story thus moves from mechanism to sensibility, understood as "the possibility, latent in the Lockean understanding of natural philosophy that dominated mid-century thought, that there may be many different forms of understanding of the world" (4). This pre-eminence of sensibility critically impacted, not just natural philosophy but also traditional authority: it was an *enlightened* position (232, 286, chapter 11 *passim*). The shift in ontology, modes of knowledge, and institutional hierarchy centring around how "questions of cognition, morality, and civic responsibilities come to be grounded in sensibility" (402) ultimately leads to the rise of "moral sciences" and the anthropological study of humanity in the late Enlightenment and beyond, which Gaukroger turns to in the sequel volume, *The Natural and the Human: Science and the Shaping of Modernity, 1739–1841* (Oxford, 2016)

This is a narrative work, with the advantages and disadvantages that come with the territory. At times the analyses hint at further volumes to come, functioning as prequels (as in chapter 2, on Newton). Yet it is also the narrative of the book and the compelling outlook and sophistication of the author – a rare case of someone who (even internalist) historians of philosophy and historians of science can read with equal profit – which make *The Collapse of Mechanism and the Rise of Sensibility* so compelling and grant it a sure status as a canonical work on early modern natural philosophy and its Enlightenment mutations.

Notes

1. Kang, *Sublime Dreams*,131.
2. Riskin, *Science in the Age*.

References

Kang, Minsoo. *Sublime Dreams of Living Machines*. Cambridge, MA: Harvard University Press, 2011, 131.
Riskin, Jessica. *Science in the Age of Sensibility.* Chicago, IL: University of Chicago Press, 2002.

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