

Locke's Fallen Baconianism

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Peter Anstey has written an excellent book on Locke and natural philosophy. He integrates deep archival research and a broad knowledge of the time and place with good judgment and sharp insight. His accounts of Locke's relations to Bacon and Boyle, of Locke's interests in biology, medicine, and chemistry, and of Locke's views on natural history and hypotheses are the fullest and best that I know.

I don't have any fundamental criticisms, just a few quibbles, friendly amendments, and supplementary remarks. If Anstey wanted deeper criticisms, he should have written a worse book.

Deductive Science

Insofar as the *Essay Concerning Human Understanding* has a thesis, it's suggested in Book 1, Chapter 1. An investigation into human understanding is useful because it can tell us what we can and can't know, and thus it can tell us where we should seek knowledge and where we should settle for mere judgment. As we make our way through the *Essay*, we find that Locke has constructed arguments that we can attain a science of morality and that there's no hope for a science of bodies, where a science is a system of known necessary consequences of known necessary principles.

According to Locke's theory of knowledge, knowledge is the perception of the agreement or disagreement of ideas. Intuitive knowledge consists in the immediate perception of the agreement or disagreement of ideas and demonstrative knowledge consists

in its mediated perception. Anstey emphasizes Locke's "independence of mind" (140) in developing this account but right after publication, James Tyrrell told Locke that someone at Oxford had accused him of swiping the best parts of the *Essay* from Descartes and his French followers (#1266 4.36).¹ Stillingfleet (1697: 246-49) assumed that Locke's theory of knowledge worked from Cartesian foundations. In the 1930s, Richard Aaron (1938) and Leon Roth (1935) argued that central elements of Locke's theory of knowledge were borrowed from Descartes. Henry Schankula (1980) defended Locke's originality against them, on the grounds that all the basics of the theory occur in Drafts A and B, too early for Locke to have seen the *Regulae*. Anstey is good at tracing the development of Locke's thought and placing his thought in its intellectual context, so I wonder about his considered view of the the relation between Locke's theory of knowledge and Descartes's rules for the direction of the mind.

Anstey (164-65) seems to regret that Locke didn't count Newtonian first principles as knowledge. But Locke didn't perceive the agreement of the constituent ideas, since he didn't perceive the necessity of the propositions. According to Locke, we can know universal propositions only when we see that no agent at all, including God, could make them false (4.3.29). As Anstey observes, Locke does give Newton's basic laws a privileged place in his discussion of grounding principles in 'Of the Conduct of the Understanding' (1823 3.282-83). Even so, given Locke's central epistemic doctrines, he wasn't going to elevate those principles to the status of knowledge. It's also worth keeping Locke's high

¹ My reference with a pound sign and two numerals are to letter number, Book, and page number in de Beer's edition of Locke's correspondence. References with three arabic numerals are to Nidditch's edition of Locke's *Essay* and references of two numerals after 'NO' are to Book and Aphorism of Bacon's *New Organon*. I'm grateful to Martin Curd for helpful comments.

standards for knowledge in mind when considering his denial that hypotheses expand our knowledge.

Locke's hope that there could be a science of morality turns on an analogy with mathematics (3.11.16-17, 4.4.7, 4.12.8). The truth of geometrical theorems doesn't depend on the external existence of shapes resembling their ideas. Likewise, if nothing in the outside world corresponded to them, the propositions in Cicero's *On Duties* would still be true (4.4.8).

Anstey cites an astute paper by Emily Carson (2005) in which she argues that there's a tension between Locke's belief in the instructive character of mathematics and his belief in the ideality of its objects. Instead of concluding that Locke believes that our judgments can be both instructive and based on ideal objects, Anstey infers that mathematical judgments are not grounded ideas but rather on physical correlates of those ideas. There aren't really any texts that show that, and, indeed, after one of the passages that Anstey cites in support of his reading, Locke goes on to assert the ideality of mixed modes: "these mixed Modes being also such Combinations of simple *Ideas*, as are not looked upon to be the characteristic Marks of any real Beings that have a steady existence, but scattered and independent *Ideas*, put together by the Mind" (2.22.1, cf. Anstey 131).

When I first read the book, I thought that I would be able to disagree with Anstey's discussion of species (ch. 11), but it turned out to be right and reasonable on a second go through. Anstey acknowledges that Locke was a conceptualist about universals. That is, he concedes that for Locke everything is particular as it is in itself and that words and ideas become general by representing more than one thing. Anstey's points are that Locke believes that living things and other corporeal substances out in the world resemble one another with respect to their real essences and that we can narrow down these resembling

classes through the pursuit of natural history. I personally wouldn't call that realism about species, but rather an apt way of capturing Locke's concessions that there are resemblances among living things (3.3.13, 3.6.36-37). Perhaps Anstey may be criticized for contrasting his view with those of Paul Guyer, Susanna Goodin, and David Stamos at the beginning of the chapter, since it's not obvious that they meant to deny what Anstey means to assert.

Natural History

I appreciate and approve of Anstey's emphasis on the place of natural history in Locke's epistemology of nature, since it brings out the lofty place that Bacon held in seventeenth century English philosophy. On the other hand, relative to the Baconian background, instead of saying Locke made hypotheses subservient to natural history, it might be more illuminating to say that by decoupling natural history and hypothesis, he deemphasized the importance of both.

An individual's particular judgments of observed co-existence of qualities count as sensitive knowledge, but testimony from others, and generalizations from that testimony rise only to the level of assurance, a sort of judgment that falls short of Locke's high standard for knowledge (4.12.9, cf. Anstey 110). The inference from observed to unobserved conjunctions becomes the backbone of Hume's epistemology and constitutes what current critical reasoning textbooks often call induction. For present purposes, it's worth noting that Locke restricts the conclusions of such inferences to judgments about perceptible objects, while he restricts hypotheses to judgments about objects beyond perception (4.16.12). Thus, though Locke believes that natural history provides us with more utility and certainty than hypothesis, it isn't exactly right to see them as rivals, since they concern different domains.

Seventeenth century attitudes towards hypotheses were mixed. Anstey cites various figures who disparaged unsupported and arbitrary hypotheses (74-76). Anstey (37-40) traces the origin of Locke's hostility to hypotheses back to pessimistic medical essays Locke wrote in the late 1660s. He also cites Boyle and Hooke as defenders of the Baconian practice of moving back and forth between experiment and hypothesis, using natural histories to generate intermediate axioms (81-82, *NO* 1.104), and crucial experiments to eliminate false ones (*NO* 1.105, 2.36). Locke breaks with this tradition by severing the connection between experiment and hypothesis.

Anstey emphasizes the implication that for Locke hypothesis becomes a matter of analogical guesswork without empirical implications or much hope of accuracy. Those who want to play up the role of hypothesis in Locke's epistemology have hardly any material to work with. But it's worth adding that breaking the connection between experiment and hypothesis depreciates the importance of natural history as well. In Bacon, as Anstey observes (81), natural history is a first step to finding the simple forms of things, and from there, forming a deductive, exceptionless, useful science of the world. In Locke, natural history leads to practically useful generalizations, but it doesn't illuminate any of the secret structures of nature. (Bacon criticized this approach as ant-like empiricism *NO* 1.95).

Anstey usefully observes that not all of the heroes of the the underlaborer passage (namely, Boyle, Sydenham, Huyghens, and Newton) are corpuscularians. Anstey suggests instead that "what unifies the four masters in Locke's eyes . . . is their adherence to and practice of the experimental philosophy" (220). I'm convinced, but I blush to confess that

I'm not sure how that differs from saying that they were 'scientists' *avant la lettre*.² Didn't we already know that the four master builders were scientists?

I would emphasize the negative character of the underlaborer passage. Locke's point is that he doesn't want to dictate method to leading scientists, but rather wants to clear aside false doctrines that stand as obstacles to the reception of their works. Locke's main contribution to the epistemology of science was negative. Against Descartes, he argued that we can't find the fundamental principles of natural philosophy by inwardly seeking innate principles. By the time Malebranche died in 1715, just about everyone in Britain and France was convinced.

Locke's endorsement of natural histories as a method of inquiry is watered-down Baconianism. I wouldn't want to call it a major achievement. Locke himself was open to new approaches. At 4.17.7 he approvingly cites Hooker's hope for new methods of inquiry that would lead to a great leap forward. At 4.12.15, he suggests that something analogous to algebra might lead to scientific progress (cf. 4.17.11).

As Anstey reports (13), none of Locke's statements about the aim of the *Essay* suggest that he intended to make a contribution to natural philosophy. All the same, his defense of the conceivability and actuality of a vacuum and the arguments rejecting substantial species as explanatory kinds surely count as natural philosophy.

The *Essay's* main contribution to natural philosophy is as a piece of psychology. Anstey brings out the natural historical aspect of this project well (223-35), and he also connects Locke's theory of ideas to his epistemic strictures. Bacon had assumed that new

² A related niggler: Anstey, following William Newman and Lawrence Principe calls 17th century chemistry 'chymistry,' in order to highlight its continuity with 17th century alchemy. Given the continuity in methods and subject matter between 17th century chemistry and recent work in the field, they could save themselves some fussiness by just calling the relevant disciplines 'chemistry.' If Boyle could call himself a 'chemist,' we can call him that, too.

notions would be generated by the process of natural history and inquiry (NO 1.16, 2.19) and warned against assuming that the entire world operated in accordance with mechanical principles (NO 1.66). Locke believes that all of our ideas are derived from simple ideas of experience (a doctrine Anstey calls the Simple Ideas Condition). It follows that we can only conceive of operations with which we are familiar (what Anstey calls the Familiarity Condition), and thus that agency is through contact (what Anstey calls the Contact Principle). Thus, corpuscularianism gives the leading hypothesis for capturing the real essences of bodies,³ and if some other explanation is true, we won't be able to conceive of it (4.3.16).

Anstey observes that Locke, early and late, connected his theory of ideas with his epistemology of science, but warns us not to get carried away: “informal intelligibility arguments are deployed by him on the one hand for the new theory of qualities, and on the other hand against the intelligibility of the fundamental notions of the corpuscular theory” (162). This is a paradox that could use some smoothing out. Because he was in the grip of his own theory of ideas, Locke came to believe that only corpuscular mechanisms could count as intelligible *explanantia*. When basic corpuscular qualities are considered as *explananda*, they can't be explained by any of our intelligible corpuscularian principles on pain of circularity. Locke is left with asserting that the fundamental properties of cohesion and the transfer of motion through impulse are to be explained either by appeal to divine fiat or through some hidden explanation that would be clear to us if we had a clear idea of the substance of body. Anstey says the point of Locke's discussion of cohesion in 2.23 of the *Essay* is to “force us back to the method of natural history” (109), but it's more accurate to

³ Anstey says that “Locke would reject Bacon's ontology of form and essence” (81), but I don't think that he really means it.

say that Locke's point was to show that our idea of the substance of body is as obscure as our idea of the substance of spirit (2.23.30).

According to Anstey (32), "it's not too much to claim that . . . the dominant philosophical problem that Locke confronted in his reflections on the nature of natural philosophy" was our inability to determine the microphysical structures of bodies. From Locke's perspective, I think, that problem isn't quite as deep as the problems of accounting for cohesion, impulse, the laws of nature, and the production of sensation in us. Where Locke knuckles down and argues for the impossibility in principle of a philosophical science of nature (4.3.29), those are the problems that he presses.

Chrysopoeia

Towards the end of his fascinating discussion of Locke's interest in Sophic Mercury, Anstey lets some of the air out of his own tires. Towards the end of his life, Boyle thought that he was hot on the trail of a compound that would allow him to create gold, and he used his influence to have Parliament repeal its law against such transmutations. After Boyle's death, Locke was convinced that Boyle was onto something, and he took steps to try to acquire the recipe. Anstey places this discussion in a chapter entitled 'iatrochemistry' and declares that Locke's interest was only medicinal, since there wasn't any evidence that he was interested in Sophic Mercury for the sake of creating gold (185). But, really, who among us, upon being offered a formula for creating gold would think about medical applications?

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