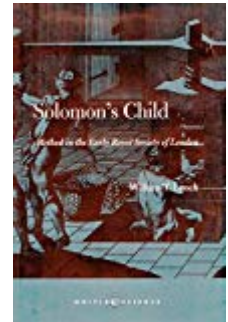


William T. Lynch. *Solomon's Child: Method in the Early Royal Society of London.*
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Preconceived Theories and the Baconian Method

Although written with some flair and real ingenuity, this is a deeply flawed book. It suffers from the fact that the author, somewhat obviously, uses a number of cases from late seventeenth-century English science to support a preconceived theory about the methodology of Francis Bacon. Given the fact that one of the main strengths of the Baconian method lay in its attempt to avoid the distortion which inevitably follows from seeking evidence to support preconceived theories, this is somewhat ironic.

In large measure the difficulties with the book arise out of the author's decision to base his arguments *not* on original research into the writings and other remains of seventeenth-century authors, but on what other authors have already said about his chosen practitioners of Baconian science. This is apparent even in the way the author tries to set up his own original thesis. He starts from a well-acknowledged fact: there was a wide variety of methodological approaches to the acquiring of natural knowledge used by leading

fellows of the Royal Society, and yet the fellows all professed to be following the Baconian method.

Among the usual way of dealing with such seeming contradictions among the fellows is to acknowledge the contingencies of history, the social usefulness not just of knowledge but also of knowledge claims, and the concomitant need to dress things up in carefully chosen rhetoric. Recent scholarship, therefore, has shown how a particular version of Baconian scientific method was used for promotional and propaganda purposes by the leading spokesmen for the Royal Society in their published works, while in their actual practice, these same fellows did things in a variety of different ways.

The author rejects this approach. He wishes to claim, instead, that the variety of different methods which can be seen at work among the fellows are all equally Baconian, providing we understand the Baconian method aright. The author provides an outline of a threefold Baconian method and argues that each of the fellows he deals with can be seen as pursuing this tripartite Baconian method in different directions. What

have previously been seen as deviations from the professed Baconianism of the Royal Society, are merely the result of our failure to properly understand the Baconian method. According to Lynch, once we understand the three elements of Bacon's methodology, we can see how these fellows were all Baconians, even though, in the end, their different emphases pulled in different directions and seemed to undermine the unified picture the leading spokesmen for the Society wished to present.

In principle this sounds very good. If Lynch could succeed in showing this to be the case, we would certainly have an enhanced understanding of early modern natural philosophy and its development. That requires, of course, a detailed analysis of Bacon's method showing the existence of the kind of three-fold complexity that Lynch claims to discern. Additionally, we need to be shown clear evidence that early modern natural philosophers also saw these distinctions in Bacon's philosophical works along with concise examples of them invoking one or other of these distinctions in their own work. But this is, at best, only tendentiously presented or, at worst, entirely lacking.

A clear account of Bacon's method from its first principles, through to its most detailed elaboration, should have formed the foundation of Lynch's completely new and original interpretation of Bacon's method. After all, it's not as if Lynch is rejecting the validity of these readings of Bacon and replacing them with his own. He accepts them, and adds his own reading to them. Readers unfamiliar with Bacon's methodological pronouncements are provided with a few unexplained and barely adequate Baconian buzz phrases. Accordingly, they have so little to go on that they have to take Lynch's additions pretty much on trust.

Lynch acknowledges what has always been accepted as the dominant aspect of Baconian methodology as the first of the three-fold method he discerns. He refers to this as the "specular conception of objects" or the "specular account of ob-

jects" (pp. 21-2), and by this he means the passive observation and gathering of matters of fact, unaffected (or supposedly unaffected) by any pre-conceived hypotheses or theoretical (much less ideological) commitments. Although Bacon scholars have disputed the validity of this reading of Bacon's method, there can be no doubt that it reflects what later seventeenth-century writers thought they saw in Bacon's writings. So far, so good.

Lynch goes on, however, to describe what he calls "a constructivist definition of objectivity" in Bacon's philosophy (pp. 22-24). He bases this on what he sees as an emphasis upon technological improvement in Bacon's writings, and what he sees as the "active manipulation" of nature in experiments, in order to make it reveal its secrets. Here we have an active, purposeful dimension in Bacon's methodology, which somehow runs alongside the passive gathering of facts. I believe Lynch has been seriously led astray here by relying upon secondary sources, instead of looking more closely at Bacon himself.

The emphasis upon technological improvement in Bacon, for example, is a myth which has grown up since the industrial revolution. Bacon was one of the first natural philosophers to insist that knowledge of nature should be put to use for the practical benefit of mankind. Looking back from after the industrial revolution, indeed from after the growth of the science-technology complex which is so characteristic of modern life, scholars took this to be evidence of the great man's foresight and prescience. As a number of Bacon scholars have tried to suggest, this is entirely anachronistic. If we look at Bacon's examples of useful knowledge, they all come straight out of the natural magic tradition, for example how to live longer, how to create tempests or calm the winds, how to change oneself into other forms, or how to resist poisons. There is hardly a mention of machines. Bacon was not being prescient, he was simply trying to get ivory-tower natural philoso-

phers to pay more attention to what natural magicians were doing (or claiming to do). But this did not mean that Bacon was deviating from his belief that the best way to reform knowledge is to compile (in as theory-free a manner as possible) huge databases of matters of fact. On the contrary, as he famously said at the outset of the *Novum Organum* (1620), his major statement of his method, "Towards the effecting of works, all that man can do is put together or part asunder natural bodies. The rest is done by Nature working within" (Part I, Aphorism p. 4). There are natural powers which can accomplish things and all we can do is know where to apply them. The best way to discover what these natural powers are, Bacon would have said, is to gather facts and compile them in the tables of instances.

Lynch tries to support his claims that there is something different going on here, and which is not entirely compatible with the passive observational aspect of Baconianism, by quoting Bacon on experiment. Unfortunately, this quotation will not serve his turn. Indeed, this is a famous quotation among philosophers of science, often used to show that Bacon did not understand experiment in the modern, manipulative sense: "I contrive that the office of the sense shall be only to judge of the experiment," Bacon wrote, "and that the experiment itself shall judge of the thing" (p. 23). Although not quoted here, Bacon goes on to say that experiments never "miss or fail," because whichever way they turn out, they answer the question. This is perfectly true if your only concern is to passively record the matter of fact resultant from the experiment. But just try telling Galileo that an experiment is equally good whether it proves his preconceived hypothesis to be right or wrong. Philosophers of science are right: Bacon's concept of experiment is unlike that of other scientists, precisely because it is not intended to test a preconceived hypothesis, but merely to reveal a new fact. It is therefore entirely in accord with his em-

phasis upon the importance of passive, theory-free, observation.

We can now move on to what Lynch sees as the third aspect of Bacon's method. He calls this a "generative view of objects" and by this he seems to want to imply that Bacon believed we should strive to uncover the hidden powers in nature which combine together to generate the ordinary objects of our everyday experience (p. 24). Lynch raises this view upon a single quotation in which Bacon expresses a fairly standard reductionist belief. Since words are made of letters, if we wish to understand the forms of words we need to know the letters. Likewise, instead of trying to understand the forms of every creature and artefact in the world, we should aim to know the presumably restricted qualities which combine together to "sustain the essences and forms of all substances" (p. 24). But this reductionism is entirely implicit in Bacon's discussion of his tables of discovery. His one and only example of how such tables would work, in the second part of the *Novum Organum*, uses the example of heat, one of the qualities listed by Bacon here. So, once again, Lynch is not presenting a new and different aspect of Bacon's method, he is merely taking a detail from Bacon's account and presenting it as though it has a separate existence of its own in Bacon's thought.

It seems to me, therefore, that the differentiation of Bacon's method into specular, constructive and generative approaches not only is not proven but is simply wrong, being based on a failure to properly engage with what Bacon himself wrote. Moreover, I believe the author has used what have previously been seen as non-Baconian elements in the work of fellows of the Royal Society simply to support his claims that Baconianism included previously unacknowledged elements.

Consider John Wilkins' *Essay Toward a Real Character and a Philosophical Language* (1668), which forms the subject of Chapter 4. It seems clear that instead of deriving from Lynch's new insight into Baconian methodology, it actually in-

spired the generative interpretation of Bacon's method. Wilkins' "drive to uncover an alphabet of causal powers and a grammar of their possible relationships" (p. 31) fits Lynch's reading of Bacon's reductionist analogy between letters and the qualities and powers of things like a glove. Wilkins' ambitions to create a universal language, however, are best understood within a tradition which long pre-dates Bacon and his suggested reform of natural philosophy. Furthermore, Wilkins was fully conscious of working within that other, non-Baconian tradition. Wilkins can only be made to be seen as engaging in a Baconian enterprise by discovering a previously unnoticed "generative object of knowledge" in Bacon's methodology. Lynch's reading provides not only the evidence that Wilkins pursued the generative aspect of the Baconian method, but also evidence that there must have been such an aspect to the Baconian method.

While concentrating here on the first chapter, where Lynch sets up and summarizes his case, I should add that the other chapters include adept uses of standard accounts of John Evelyn, and his work on silviculture, Robert Hooke and *Micrographia*, Wilkins and his universal language scheme, Thomas Sprat and his *History of the Royal Society*, and John Graunt and William Petty on political economy, all in the service of Lynch's tendentious reading of Baconian methodology. The overall impression, however, is one of special pleading rather than clear and unassailable historical argument.

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