

Who's the Boss? Francis Bacon: 'Safe' Reform from the Top Down

Bacon was a lot like the mechanists¹, but working about a half a generation earlier, around 1600-1610. Like them he was trying to put forward an alternative natural philosophy that could displace the magical alternatives (as well as Aristotle). His attitude was not mechanist—his overall natural philosophy is not mechanist at all, in fact his matter theory is a bit magical, matter is sort of alive in various ways. But that is not the essential point...

It's his program and his values that make him more like the mechanists than like the magicians. First of all we have the centrality of his method, Baconian method, means a very careful fact collection, fact checking, generalisation and experimental exploration and testing, so that you move step by step, cautiously to higher and higher levels of generalisation. Of course we shouldn't take this seriously, shouldn't take any method story seriously as a guide to actual scientific research—but it was a convincing rhetoric about the nature of science—still cited today (even if people don't know it comes from Bacon!)

In any case his method as such was only one side of this proposal, because he also stressed at length that his new method should be institutionalised in a working Scientific Research Institution, closely related to the State, to the government.

Bacon argued that existing natural philosophies were all basically based on knee jerk, reactions—Platonism, magic, Aristotelianism. They were not based on a careful, systematic approach to building up knowledge—that's why he wanted to bureaucratise his new method—its not just a method but an organisation of science. He outlines this in his scientific utopia, the New Atlantis (1620) where he proposes an ideal state based around a scientific research institution—the top guys in the research organisation are also the rulers of the state—sort of high priests of science.²

Bacon comes from a Protestant, indeed Puritan background, although he's not a Puritan himself in politics or religious practice. He was in fact a very very high state official, ending up Lord Chancellor of England—but deep inside he harboured puritan sentiments and moral attitudes.

So, for example, he wanted the new natural philosophy to be based upon an open, hardworking, honest, morally upright approach to the work. His main complaint against existing systems was not that they were false but that their founders and followers suffered from moral, even psychological failings. Aristotle was a pedant who would rather hear himself talk than investigate facts (a bit of a libel there). The magicians make a big deal out of the few trivial little useful results they have gotten. They are also secretive and do not do the hard work necessary.³

We have here the beginning of the idea in the West that the real man of knowledge is hardworking, methodical, honest, meticulous, open...you might even say puritanical in a psychological rather than theological sense. He doesn't boast, speculate, play secretive games, he's open, objective, public spirited. Sounds nice doesn't it?⁴

Another important thing about Bacon, and another thing that cuts against magic is that he is very concerned that natural philosophers learn from the practical arts and crafts—from technology as we would say. This is the way forward for natural philosophers. He does not think craftsmen are natural philosophers, or that they should be—that is reserved for honest and trustworthy gentlemen like himself—but Bacon does think there is a lot of good and useful knowledge to be gotten out of the existing crafts and good natural philosophy will learn from the crafts and then repay the crafts with improved, useful natural philosophical findings—there will be a two way traffic between natural philosophy and the practical arts; or as we would say between pure scientific research and technological innovation. Well this view is very close to, identical to that of the mechanists, when they come along.

Bacon argues that the only areas that have progressed since the Greeks have been the practical arts. Natural philosophy has been going around in circles for centuries. Look at the natural philosophers we have in the 16th century he is sort of saying—alchemists, magicians, neo-Platonists, University Aristotelians—what that? It's all a set of rackets—self-serving, ethically corrupt, vacuous stuff. Craftsmen make progress—we must learn to do natural philosophy in that progressive, methodical and technologically applicable way.

Not so strange bed-fellows: Mechanism later endorses (safe) Baconianism

Now if this sounds like modern rhetoric of science—that's because Bacon virtually invented it. Because he was anti-magical, and anti-Aristotelian and sounded so much like the mechanists, when they came along, they took his rhetoric on board.

In the period 1640 to 1670 as mechanism spreads and triumphs Bacon's rhetoric, his ideology of knowledge gets moulded with mechanism. I talk about this in the articles in the Companion to the History of Modern Science. Mid 17th century mechanism is not just the work of the pure mechanism boys, but has this component of Baconian rhetoric—which has passed right down into modernist rhetoric of science and progress—domination of nature is good, science and technology will interact; society will progress, everyone will be happy and morally upright.

So even though he was not really a mechanist, his programmatic rhetoric gets fused to the mechanical philosophy into a powerful anti Aristotelian, anti magic package that is with us today.⁵

The Real Frank Bacon in his own time: Progress for all (in the long run) just listen to me.

Finally, in his own lifetime, as I said, Bacon was an establishment figure. He wanted his reform of natural philosophy in and for England and the English State. He wanted reform from the top down not by radical

magicians, natural philosophers, Paracelsians, religious enthusiasts who were running around, making trouble. He did not want people making claims to knowledge that were not under his control. His attitude toward natural philosophy is the same as his attitude to religion—he's Lord Chancellor remember—he wants to stamp out religious and natural philosophical trouble makers—just as a nice centralised Anglican State Church has calmed down the religious turmoils of the 16th century—so the reform of knowledge from the top and center down will advance society and keep order and stability. He knows a reform of knowledge is needed, just like a reform of the old Catholic church in England had been needed—but he wants that reform on his own terms.

His rhetoric is all will benefit, mankind in general—it really means people around and with him and the elite. Things will trickle down to the rest over time. England, or the elite of England will benefit. His outlook is royalist, establishment, English Imperialist—when he talk about method or domination of nature he sounds universal but his real agenda is local and national, and for the elite first.

And that's always the problem with the idea of progress—it's always stated in universal terms but always aims first at some people rather than others. Deconstruct his rhetoric—when he says everyone will progress, he doesn't really mean the Catholic Church or England's enemy Catholic Spain; he means James the First and his government and then the people of England will benefit—of course James ignored all this and non of it happened, but the rhetoric lived on. Like Descartes and the mechanists Bacon was a conservative establishment figure—conservative in religion and politics, radical in natural philosophy and ideas.

Ironically for a brief moment in the 1640s and 50s during the English Civil war. The puritans took on Bacon's rhetoric in a radicalised form and used it to beat up their enemies in the English establishment—the royalists and the conservative Anglicans.

But the big picture is the fusion of Baconianism with main line mechanism in the middle and late 17th century—and that brings us back to our 7 or 8 points from the first lecture....

Consensus and Consolidation 1650-1700 but look out for weird Isaac...

So, to summarise by 1660 or 1670 virtually all educated men thought that the mechanical philosophy was correct. And the mechanical philosophy merged with Baconian rhetoric about experimental method, about the progress of science and the material and moral improvement it could be bring. Aristotelianism, however, continued to be taught in the universities down to about 1700

We're going to look at some of the developments following from this change of natural philosophy in the mid 17th century: in particular we are going to look at the swerve or shift introduced into this nice mechanistic consensus by the weird "post-mechanical" natural philosophy of Newton.

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¹ The mechanical philosophers—Descartes, Hobbes, Boyle and others envisioned a 'world machine' consisting of atoms or 'corpuscles' obeying laws of motion and collision. Their natural philosophy replaced Aristotelianism and became dominant from the 1650s onward.

² The whole thing is quite similar to more radical utopias recent published by some of the more spaced out neo-Platonic magicians. Bacon's trying to co-opt the idea and make it safer.

³ So his criticism of his contemporaries in natural philosophy is not so much you've got the wrong theory of nature, but you've got the wrong moral and political approach and so, as a consequence, you fail—he was the first historian and sociologist, even psychologist of science and he was damn good at it—much better than he actually was at natural philosophy and real research.

⁴ Bacon could not stand the smug, secretive, mutual back slapping and secret hand shaking attitude of magicians and alchemists—ho, ho, ho, we know more than you do.

⁵ There is a whig Bacon (Bacon as genius and hero of science) and today an inverse whig Bacon (Bacon as bad guy creating with other bad guys like Galileo and Newton, nasty, masculinist, chauvinist, anti-environmental 'modern science'). Avoid both, but get to understand Bacon in context of his own time, and how mechanists exploited his discourse in their own context a generation later.