

Bacon, Descartes and explicit method

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Core question

What changed when methods for producing reliable knowledge became explicit objects of analysis rather than tacit features of particular disciplines?

Historical and evolutionary context

Francis Bacon and René Descartes are often presented as rival founders of “the scientific method”: Bacon as the champion of induction from experience, Descartes as the champion of deduction from clear principles. That textbook opposition is too simple. Neither supplied a universal procedure that later science merely adopted, and seventeenth-century science developed through many methods at once.

Their historical importance lies instead in making method itself unusually explicit. Bacon criticised premature generalisation and proposed organised natural histories, comparative tables and gradual ascent from observations toward more general claims. Descartes sought procedures for decomposing difficult problems, ordering reasoning and extending mathematical intelligibility across domains. His actual scientific work in optics, mechanics and meteorology was more complex than a four-rule summary of the *Discourse on Method* suggests.

This explicit reflection emerged in a period when inherited authorities were being challenged by new astronomy, anatomy, instruments and mathematical physics. The problem was no longer only “what is true?” but also “what procedure should make a claim trustworthy?”

What could communities know before this transition?

Earlier traditions possessed logic, demonstration, observation, experiment and disciplined commentary. Medieval scholastic disputation had already formalised ways of testing arguments. What became more prominent in the seventeenth century was the attempt to state general strategies for discovery and certainty across fields.

What changed?

Method became a portable topic. Investigators could criticise not only conclusions but the procedures by which conclusions were generated.

Why could this capability emerge?

Printing expanded methodological debate; mathematical sciences provided models of certainty; new instruments destabilised inherited cosmology; voyages and natural histories enlarged empirical domains; and confessional and political fragmentation heightened concern about reliable authority.

What later forms of knowledge did it enable?

The language of method helped support later programmes of experimental philosophy, academies and public witnessing. It also created a durable expectation that scientific claims should be accompanied by an account of how they were obtained.

New limits and risks

Explicit method can become mythology. Historians have repeatedly shown that actual discovery is messier than retrospective methodological rules suggest. A declared method is not evidence that investigators followed it consistently.

What changed in the architecture of knowledge?

Knowledge production became more **self-reflective and procedurally explicit**. Methods themselves could be compared, criticised and redesigned.

Loss, exclusion and uncertainty

Bacon and Descartes should not be treated as inventors of a single scientific method. Their programmes differed substantially, and later science drew on practices from artisans,

physicians, mathematicians, navigators and experimental communities that cannot be reduced to either figure.

Dependency map

- INDIRECT ← PIO-023 Deductive proof: what Greek geometers added
- INDIRECT ← PIO-041 Medieval universities and organised disputation
- INDIRECT ← PIO-049 Galileo and controlled measurement
- DIRECT → PIO-051 Academies, journals and the public experiment
- INDIRECT → PIO-053 Newton, mechanics and universal gravitation

References

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2. Schuster, J. A. "Whatever Should We Do with Cartesian Method?—Reclaiming Descartes for the History of Science." In *Essays on the Philosophy and Science of René Descartes*, pp. 195-223. Oxford University Press (1993). DOI: 10.1093/acprof:oso/9780195075519.003.0014.
3. Bacon, F. *Novum Organum* (1620).
4. Descartes, R. *Discours de la méthode* (1637).