



## **Study Guide on Francis Bacon's *New Organon* (Dedication, Prefaces, Plan, Book I)**

What does Bacon see as the true end of knowledge? Is knowledge practical or speculative—or is this distinction not real in Bacon's mind? Consider the following passages:

- “[W]e want all and everyone to be advised to reflect on the true ends of knowledge: . . . [to seek it] for the uses and benefits of life, and to improve and conduct it in charity” (13<sup>1</sup>). Bacon then references “human progress and empowerment,” and the “common good” (13).
- “Therefore those two goals of man, knowledge and power, a pair of twins, are really come to the same thing” (24).
- “The true and legitimate goal of the sciences is to endow human life with new discoveries and resources” (66).
- In Aphorism 124, Bacon responds to the objection that “the contemplation of truth is worthier and higher than any utility or power in effects,” yet Bacon's experimental process would detract from the tranquility of wisdom. He concludes, “Truth and usefulness are (in this kind) the very same things, and the works themselves are of greater value as pledges of truth than for the benefits they bring to human life” (96).

Why is Bacon's proposal the “one entrance into the kingdom of man” (56)? Clarify what the kingdom of man is. How does man rule the natural world? How are knowledge and the sciences involved in his kingship? (Consider the preface to “The Great Renewal” [6 ff.], 15, 23–24, 33, 66, 99–101.)

Why is a *New Organon* (from Greek, “instrument” or “tool”) necessary? What exactly is wrong with the old one? How does Bacon's method account for and correct these errors? What is he trying to restore or renew?

- What are Bacon's criticisms of Aristotelian logic? Distinguish between criticisms of method and signs of its faultiness. (Consider 10, 16–17, 35, 51–52, 55.)
- Consider the following questions regarding the method Bacon proposes:
  - What does Bacon think about the strength and power of the unaided intellect? Why does it need “tools” (33)?
  - In what way are man's primary notions “faulty and confused” (2)?
  - What is the difference between an “anticipation” and an “interpretation” of nature (38–39)?
  - If all of our intellectual concepts are suspect, in virtue of what will one correct them? Will these correcting concepts be faulty and thus subject to suspicion? What can serve as a true measure for the primary notions?

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<sup>1</sup> Francis Bacon. *The New Organon*. Edited by Lisa Jardine and Michael Silverthorne. Cambridge: Cambridge University Press, 2000. (All page numbers refer to this edition.)



Why does Bacon think he has made “forever a true and lawful marriage between the empirical and rational faculties” (11-12)? Is this claim warranted?

What does Bacon mean by “experience” (5, 10, 17)? How does this relate to the “natural and experimental history” (109)? What method(s) for acquiring knowledge is this opposed to?

Explain what Bacon means by the idols or illusions (18–19, 40 ff.). What specifically are the idols of the tribe (42–46), of the cave (46–48), of the marketplace (48–49), and of the theater (49–56)? How must we remove them, so as to clear the path to knowledge (41, 56– 57)?

What “request” does Bacon make about judging his method (30–31)? What does he mean by “I cannot be arraigned to stand trial under a procedure which is itself on trial” (13)? (Consider Aphorisms 33–36, pp. 39–40.)

Bacon seems to criticize Aristotle for deriving particular and more specific propositions from the most general ones. “It follows from this that the order of demonstration is also entirely inverted. For hitherto the proceeding has been at the beginning to fly from sense and particulars to the greatest generalities, as if to fixed poles around which the disputations revolve; and from these to derive the rest by middle terms” (20; see also 10, 16, 35, 42, 51, 55). Is this account of Aristotle’s natural philosophy fair? Consider the criticism in light of the following:

- In *Posterior Analytics* I.32,<sup>2</sup> Aristotle writes, “It is not true that the basic truths [or “axioms”] are much fewer than the conclusions, for the basic truths are the premises, and the premises are formed by the apposition of a fresh extreme term or the interposition of a fresh middle” (155). That is, to extend the sciences, one must bring in new syllogistic middle terms, and in the physical sciences these must be obtained by returning to nature. What might Bacon object to, even in this account of Aristotle’s method?
- Aristotle does study mobile being in general before the particulars (the *Physics*, which studies mobile being simply, is his first work in natural philosophy). This procedure relies on the mind’s ability to form abstract concepts that truly represent nature. How does Bacon disagree with this general layout? What would he claim is mistaken or impossible about this starting point for knowledge?

Does Bacon allow any room for the “old” logic? Is it suitable for any kind of knowledge? Is it suitable for the classroom, the courts, or society?

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<sup>2</sup> *The Basic Works of Aristotle* ed. Richard McKeon. New York: Random House, 1941.



## **Study Guide on Francis Bacon's *New Organon*** **(Book II, Aphorisms)**

What are the “forms” Bacon proposes to seek, and how do we come to know them?

- “When we speak of forms, we mean simply those laws and limitations of pure act which organize and constitute a simple nature . . .” (1281). What does Bacon mean by “pure act”?
- What relation does Bacon see between understanding the form and making the thing? “The task and purpose of human Science is to find for a given nature its Form, or true difference, or causative nature or the source of its coming-to-be” (102).
- What does he mean by “law,” and how does it relate to form?
  - “The form of heat therefore or the form of light is the same thing as the law of heat or the law of light” (128). What sense of “law” is this? Is it prescriptive, descriptive, or something else?
  - “It is this law and its clauses which we understand by the term Forms” (103). What does the word “clauses” add to his explanation?
- How is Bacon’s notion of form different from Aristotle’s (102–103, 109–110, 127)?
- What, according to Bacon, is “true induction” (17, 83–84, 108, 127)?

What is meant by “simple nature,” and what implications does this have for true induction?

- What distinguishes the simple natures from the compound bodies (105–106)? “The first [axiom] looks at the body as a company or combination of simple natures” (105).
  - What kind of composition is this? Is it as elements combine to form compound substances? Is it as properties are “combined” in one nature?
  - Does Bacon think that color, weight, ductility, etc. exist in themselves, or only in bodies? Do the simple natures have substantial existence, in Bacon’s mind? Is the distinction between substance and accident acceptable to him? If not, then how would he answer the first question (i.e., Do they exist in themselves)?
- Bacon admits that the method of proceeding by compound bodies is “easier and more available” (106). Is this due to the imperfection of the unaided intellect—a result of one of the idols? If not, then why is this so?
- By seeking these first through meticulous observation, will Bacon’s method encounter any difficulties? What if there are hidden natures—how could he determine their presence or absence?



What does Bacon mean by “latent processes” (105–107, 127, 221) and “latent structures” (107, 127, 221)?

- How do these relate to the simple and compound natures?
- At what point in the progress of Baconian science would these be investigated— near the beginning, or only after substantial research into the simple natures?

Consider Bacon's division of the sciences in Aphorism IX of Book II (109). How does Bacon distinguish metaphysics from physics, and what relation do mechanics and magic have to them?

Bacon illustrates his method of investigation of forms by showing how it is done with heat (110). What do we learn about his method from this illustration? Does this method conform with the rule that “tables must be drawn up and a coordination of instances made, in such a way and with such organization that the mind may be able to act upon them” (109).

- The table of existence and presence (110–11): In what way is this created? Does it rely on “non-scientific” conceptions of things? If our language is deceptive and single words have been misapplied to many things differing in kind, then how do we know that everything brought together in this table will belong there?
- The table of divergence, or of closely related absences (112–119): What role do these negatives play in seeking the form of heat?
- The table of degrees or of comparison (119–126): This seems to be appropriate for heat, but can all things have such a table of degrees? Do all “simple natures” admit of degrees?

What does Bacon think of the four causes? Does he think they have any meaning whatsoever? Why does he emphasize form so much in his own science? Consider the following passages:

- Recall from Book I: “as [the human understanding] strives to go further, it falls back on things that are more familiar, namely final causes, which are plainly derived from the nature of man rather than of the universe, and from this origin have wonderfully corrupted philosophy” (44).
- “[To the discovery of the source of a nature's coming-to-be] is subordinate to the discovery, in every generation and motion, of the continuous hidden process from the manifest Efficient cause and the observable matter to the acquired Form . . .” (102). What does he mean by efficient cause here, as something we should seek?
- “It is also not bad to distinguish four causes: Material, Formal, Efficient and Final. But of these the Final is a long way from being useful . . . And the Efficient and Material causes . . . are perfunctory, superficial things . . . earlier we criticized and corrected the error of the human mind in assigning to Forms the principal role in being” (102–103). How does this fit with the passage above? Does Bacon believe that Aristotle had a different notion of efficient cause? What exactly is he rejecting?



Is Bacon himself guilty of “anticipating nature”? Consider such general convictions as:

- “Every natural action is transacted by means of the smallest particles . . .” (107). From where has Bacon received this conviction?
- “Nothing exists in nature except individual bodies which exhibit pure individual acts in accordance with law” (103). In aiming his method at discovering latent structures and processes, forms, and simple natures, is Bacon assuming that these really exist in the world, and are the principles to which all things can be explained?
  - By what standard might Bacon claim that these things are real and Aristotle’s forms are figments?
  - Could there be a natural history or set of experiments that reveals them? Could such experiments disprove Aristotle’s forms?
- In light of these considerations, to what extent is it possible to have a method for knowledge which relies on no assumptions? Must one always assume something about nature? If so, how are we to judge different assumptions or starting points?

***Suggested use:*** This study guide includes a few questions and observations about Francis Bacon’s *New Organon*. Among possible uses, one could consider these comments while reading the work; or one could use them as starting points for a classroom discussion.