

Lecture 20  
Bacon on Interpretation of Nature and Idols

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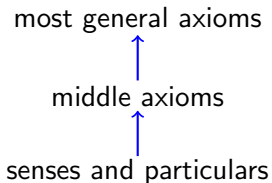
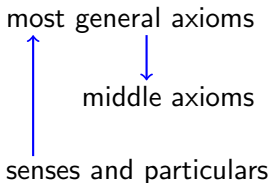
Scientific Thought I  
Fall 2009

- Francis Bacon: 1561–1626
  - Lord Chancellor of England.
  - In his spare time he worked on a grand plan for improving science.
- *Novum Organum*:
  - Book by Bacon published in 1620. It describes a new scientific method. Written in Latin.
  - English translation of title: *The New Organon*.
  - “Organon” is a Greek word meaning “instrument.” Aristotle’s writings on logic and scientific method were called “the organon.” So the title indicates that this is intended to replace Aristotle’s writings on logic and scientific method.
  - *Novum Organum* consists of a series of numbered statements that Bacon calls “aphorisms,” divided into two “books.”
  - Today we’ll discuss part of Book I.

# Interpretation of nature

## The two ways

*There are and can be only two ways of searching into and discovering truth. The one flies from the senses and particulars to the most general axioms, and from these principles, the truth of which it takes for settled and immovable, proceeds to judgment and to the discovery of middle axioms. And this way is now in fashion. The other derives axioms from the senses and particulars, rising by a gradual and unbroken ascent, so that it arrives at the most general axioms last of all. This is the true way, but as yet untried. [19]*

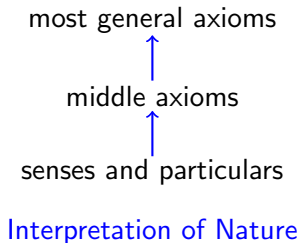
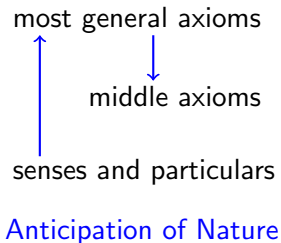


## Existing method doesn't make sufficient use of experience

- *Both ways set out from the senses and particulars, and rest in the highest generalities; but the difference between them is infinite. For the one just glances at experiment and particulars in passing, the other dwells duly and orderly among them. The one, again, begins at once by establishing certain abstract and useless generalities, the other rises by gradual steps to that which is prior and better known in the order of nature. [22]*
- *The axioms now in use, having been suggested by . . . a few particulars of most general occurrence, are made for the most part just large enough to fit and take these in; and therefore it is no wonder if they do not lead to new particulars. And if some opposite instance, not observed or not known before, chance to come in the way, the axiom is rescued and preserved by some frivolous distinction; whereas the truer course would be to correct the axiom itself. [25]*

## Terminology

*The conclusions of human reason as ordinarily applied in matters of nature, I call for the sake of distinction Anticipations of Nature (as a thing rash or premature). That reason which is elicited from facts by a just and methodical process, I call Interpretation of Nature. [26]*



## Introduction

- Bacon talks of what he calls “idols” that are in the human mind and interfere with discovering truth. “Idol” here means an appearance that doesn’t correspond to reality.
- The purpose of discussing them is that, if we know what they are, we can be on our guard against them.

*The idols and false notions which are now in possession of the human understanding, and have taken deep root therein, not only so beset men’s minds that truth can hardly find entrance, but even after entrance is obtained, they will again . . . meet and trouble us, unless men being forewarned of the danger fortify themselves as far as may be against their assaults. [38]*

- Bacon divides the idols into four categories.

## Idols of the tribe

*The Idols of the Tribe have their foundation in human nature itself, and in the tribe or race of men. [41]*

## Example

*The human understanding is of its own nature prone to suppose the existence of more order and regularity in the world than it finds. And though there be many things in nature which are singular and unmatched, yet it devises for them parallels and conjugates and relatives which do not exist. Hence the fiction that all celestial bodies move in perfect circles. [45]*

## Another example

*The human understanding when it has once adopted an opinion (either as being the received opinion or as being agreeable to itself) draws all things else to support and agree with it. And though there be a greater number and weight of instances to be found on the other side, yet these it either neglects and despises, or else by some distinction sets aside and rejects, in order that by this great and pernicious predetermination the authority of its former conclusions may remain inviolate. And therefore it was a good answer that was made by one who, when they showed him hanging in a temple a picture of those who had paid their vows as having escaped shipwreck, and would have him say whether he did not now acknowledge the power of the gods—“Aye,” asked he again, “but where are they painted that were drowned after their vows?” [46]*



## Idols of the cave

*The Idols of the Cave are the idols of the individual man. For everyone (besides the errors common to human nature in general) has a cave or den of his own, which refracts and discolors the light of nature, owing either to his own proper and peculiar nature; or to his education and conversation with others. [42]*

## Example

*Men become attached to certain particular sciences and speculations, either because they fancy themselves the authors and inventors thereof, or because they have bestowed the greatest pains upon them and become most habituated to them. But men of this kind, if they betake themselves to philosophy and contemplation of a general character, distort and color them in obedience to their former fancies; a thing especially to be noticed in Aristotle, who made his natural philosophy a mere bond servant to his logic, thereby rendering it contentious and well-nigh useless. [54]*

## Another example

*There are found some minds given to an extreme admiration of antiquity, others to an extreme love and appetite for novelty; but few so duly tempered that they can hold the mean, neither carping at what has been well laid down by the ancients, nor despising what is well introduced by the moderns. [56]*

## Idols of the market place

- These are idols due to words.
- Reason for the name: Words are used for interaction between people, which occurs in the market place. (Cf. aphorism 43)

## Example [60]

- *Names of things which do not exist (for as there are things left unnamed through lack of observation, so likewise are there names which result from fantastic suppositions and to which nothing in reality corresponds).*
- *Of [this] kind are Fortune, the Prime Mover, Planetary Orbits, Element of Fire, and like fictions which owe their origin to false and idle theories.*

## Another example [60]

- *Names of things which exist, but yet confused and ill-defined, and hastily and irregularly derived from realities . . . [This] class . . . springs out of a faulty and unskillful abstraction.*
- *Let us take for example such a word as humid and see how far the several things which the word is used to signify agree with each other, and we shall find the word humid to be nothing else than a mark loosely and confusedly applied to denote a variety of actions which will not bear to be reduced to any constant meaning.*

## Idols of the theater

*Lastly, there are Idols which have immigrated into men's minds from the various dogmas of philosophies, and also from wrong laws of demonstration. These I call Idols of the Theater, because in my judgment all the received systems are but so many stage plays, representing worlds of their own creation after an unreal and scenic fashion. [44]*

## Example

- *The Rational School of philosophers snatches from experience a variety of common instances, neither duly ascertained nor diligently examined and weighed, and leaves all the rest to meditation and agitation of wit. [62]*
- *The most conspicuous example of [this] was Aristotle. [63]*

## Another example

- *There is also another class of philosophers [the Empirical School] who, having bestowed much diligent and careful labor on a few experiments, have thence made bold to educe and construct systems, wresting all other facts in a strange fashion to conformity therewith. [62]*
- *Of this there is a notable instance in the alchemists and their dogmas, though it is hardly to be found elsewhere in these times, except perhaps in the philosophy of Gilbert. [64]*
  - Alchemists did some detailed experiments, unlike the rational school. But they devised a theory of matter that went far beyond what their experiments really supported.
  - William Gilbert (*De Magnete* 1600) did detailed work on properties of magnets but then generalized wildly, suggesting that the orbit of planets around the sun is due to magnetism.

- 1 Describe the methods that Bacon calls “anticipation of nature” and “interpretation of nature”. Which did Bacon think was the method in use in his time? What is Bacon’s attitude to these two methods?
- 2 What is Bacon’s purpose in discussing the idols of the mind?
- 3 Give the names of the four types of idol that Bacon discusses and explain what these names mean.
- 4 Give two examples of each kind of idol.



Francis Bacon.

*Novum Organum.*

London, 1620.

English translation on the web; quotations are from this.

Numbers in brackets are aphorism numbers from Book I.