

Bacon Publishes *Novum Organum*, 1620

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Promulgation of new intellectual concepts

Principal Personages

Francis Bacon (1561-1626), English philosopher, government official, and nobleman

James, I, King of England and Scotland 1603-1625

William Harvey, the King's physician

Summary of Event

The Copernican theory undermined the Aristotelian concept of the universe. In addition to Aristotelian astronomy, Aristotelian physics and metaphysics were called into question.

However, most of the early Copernicans except Galileo were unwilling to attack Aristotle strongly because his academic prestige was immense and it was reinforced by the Aristotelian presuppositions of much Catholic theology.

The most vehement anti-Aristotelian of the scientific revolution was the English philosopher Francis Bacon, who attacked Aristotle, Plato, and the other leading ancient thinkers but who, ironically, did not accept the Copernican theory. Unlike Galileo, Bacon escaped all censure for his writings, partly because of his high position in society and partly because the Aristotelian system was not strongly supported by the Church of England.

Bacon was born in London in 1561. His family was influential; his father was an official under Queen Elizabeth I, his brother served in Parliament, and his uncle by marriage was William Cecil, the Queen's chief secretary of state.

Young Francis studied at Trinity College, Cambridge, from 1573 to 1575, and when he was fourteen years old, he concluded that the Aristotelian system taught there was worthless. He subsequently studied law, served as a royal diplomat in France, was admitted to the bar, and was elected to Parliament.

He eagerly sought a royal preferment, but despite connections at court he received only a minor post under Elizabeth. Under her successor, James I, he began to rise, becoming attorney general, a privy councilor, and Lord Chancellor. In 1618 he was raised to the peerage.

Like many Renaissance Humanists, Bacon was concerned about the relationship of public life to learning, and at one point he appeared ready to leave politics altogether. Instead, he began to formulate a plan to enlist the support of the King in the total reform of education and science in England, but his ideas were never carried out.

He published several minor works, and when James ascended the throne in 1603 he published *Valerius Terminus*, a treatise on the reform of the sciences which he hoped would attract the King. It failed to do so, and in 1605 he put forth a more ambitious work, *The Advancement of Learning*, again directed to the King but again without success.

As he rose in government over the next fifteen years Bacon published relatively little, but in 1620, at the height of his political career, he brought forth his greatest work, the *Novum Organum*, or the *New Logic*, dedicated to James. The King, who was learned but narrow-minded, dismissed it humorously, saying that he could not understand it. His judgment was probably influenced by the court physician, **William Harvey**, discoverer of the circulatory system of the blood, who said: "Bacon writes philosophy like a lord chancellor."

Bacon announced the *Novum Organum* as the second part of a six-part "great instauration," or renewal of the sciences. The first part, summarized in the *Novum Organum*, was the doctrine of idols, the second a new method of inquiring into nature, the third a natural history, the fourth the factual results of the new method of inquiry, the fifth incomplete and uncertain results, and the sixth a comprehensive natural philosophy replacing the systems of Aristotle and other sages.

The doctrine of idols was Bacon's belief that the progress of the human mind is retarded by certain notions which it harbors uncritically. The idols of the tribe, the human race, are misconceptions common to all men, such as reliability of the senses. The idols of the den are in each man's private nature, such as his temperament and educational background. The idols of the market are errors agreed on by human society, such as the meaning of words. The idols of the theater are the ideas of the formal philosophers who construct false and theatrical worlds.

Bacon believed that twin errors about the world into which men fall are either arrogant reliance on their own judgments or despairing skepticism about understanding anything. He aimed to avoid both by creating a method of modest but persistent inquiry.

Man was given dominion over nature by God, but he lost it partly by blinding his mind to nature and partly by becoming lost in the maze of words and meaningless concepts which make up traditional philosophy, especially Aristotelianism. Man can recover his understanding of nature only by carefully observing it with the help of instruments, because nature will yield herself only to those who probe her.

The great enemy of fruitful inquiry is Aristotelian logic, which leads men to make sweeping deductions about the world on the basis of a few scanty facts. To overcome such intellectual

laziness, a wholly new system of logic must be constructed in which there is close harmony between the probing of nature and the formulation of natural secrets into valid general principles.

Although he professed respect for certain ancient Greek scientists and philosophers Bacon believed that the classic age of Greek philosophy, beginning with Socrates, marked a regression from true knowledge, as men became more turned in upon themselves and ignored nature. Education from the days of Plato until Bacon's own day had fitted men only to deal with words and subtle theories. The actual content of human knowledge had been expanded very little.

Bacon was a religious person indisposed to question theological doctrine, but he insisted that theology should be rigidly separated from philosophy, an idea which ran counter to academic tradition; Bacon believed that the truths of religion are indisputable, and rational inquiry can unlock only the secrets of nature, not of God or of the human soul. Ethics and politics, because they deal with human nature, should also be separated from philosophy.

Natural philosophy, the philosophy of physical nature, is thus the queen of the sciences, although a valid natural philosophy cannot be constructed until much preliminary experimental work has been done. This experimentation must be organized, involving the planned labor of many scientists, and it requires the support of rulers to provide money and authorize reform of the schools.

Bacon identifies truth with usefulness, the latter proving the former. A discovery which cannot yield any practical results is of doubtful truth. The aim of all philosophy is to advance man's actual control over nature.

The last part of the *Novum Organum* is taken up with Bacon's descriptions of some experiments he had performed with heat, and with the analysis of many types of axioms which might be derived from experiment.

Bacon's work attracted little notice in England at first, but it gradually began to be read in learned circles on the Continent. It received favorable comment from René Descartes and others. Bacon never completed the "great instauration," although he did publish a *Natural History* in 1623.

In 1621, a year after the *Novum Organum* was published, Bacon was charged by Parliament with taking bribes while he was Lord Chancellor. He was technically guilty, but the practice was an accepted part of almost all official activity. Parliament, however, was beginning to assert itself against James I and wished to strike at Bacon for his defense of royal power. He was convicted and removed from office.

Although he hoped eventually to return to politics, Bacon continued his scientific researches after his fall. In 1626, he died near London of a chill contracted while trying to refrigerate a chicken.

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