

Popper. The course ends with the defense of tradition put forth by Alasdair MacIntyre and Robert Nozick's defense of libertarianism.

Lecture Twenty-Five

Introduction

Darren Staloff, Ph.D.

Scope: From the close of the fifteenth to the end of the seventeenth century, Latin Christendom was fundamentally transformed. Philosophically, the epoch is opened by the age of the Renaissance, a rebirth of classical learning and art. The seventeenth-century Age of Reason was characterized by a thorough rejection of all received authorities and a growing awareness of the tensions between rational philosophic speculation and traditional religious beliefs. The seminal work of Sir Isaac Newton brings the Age of Reason to a close and marks the onset of the Age of Enlightenment.

Outline

- I. From the close of the fifteenth to the end of the seventeenth century, Latin Christendom was fundamentally transformed. The period marks the end of the feudal and medieval epochs and the birth of the modern age.
 - A. The end of the fifteenth century marked the beginning of the age of discovery. The transfer and development of technologies revolutionize the age.
 - B. The age of discovery, tapping into long-distance trade networks, heralded an age of commerce, both within Europe and between Europe and the rest of the inhabited world.
 - C. Accompanying the commercial revolution (and a concurrent demographic revolution) was the emergence of the early territorial nation state.
 - D. These centuries were also characterized by a series of intense confessional struggles between the Catholic and Protestant nations and churches.
- II. Philosophically, the epoch is opened by the Renaissance, a rebirth of classical learning and art, a self-conscious rejection of religious tradition.
 - A. The southern or Italian Renaissance was characterized by an unflinching embrace of classical humanism and was often hostile to Christian ethical, political, and scientific teachings.
 - B. The northern Renaissance was far more pietistic and sought to unify classical learning with the social ethic of Christianity, while nonetheless rejecting the scholastic inheritance.
 1. In his *Utopia*, Thomas More sought to show the fundamental affinity between the teachings of Christ and those of Plato in *The Republic*.

2. Erasmus critiqued the enthusiasm and dogmatism of the reformed scholastics and urged instead a more humanistic concentration on good works and a commitment to religious toleration.
- C. The scientific Renaissance rejected the presumed authority and sanction of scholasticism and its fusion of revealed dogma with Aristotelian metaphysics.
1. Francis Bacon argued instead for a modern science that would produce useful knowledge by means of induction and experiment. His goal was to make man the master of his world and, thus, the measure of all things.
 2. Galileo claimed that nature is the book of God and that it is written in the language of mathematics. Science is a “priestcraft” that reveals to us God’s will.
- III. The seventeenth century Age of Reason was characterized by a thorough rejection of all received authorities and a growing awareness of the tensions between rational philosophic speculation and traditional religious beliefs.
- A. The Rationalists sought to construct philosophic systems on the basis of pure mathematical reason.
1. René Descartes formulated the central project of rationalism with his exposition on method, epistemology of clear and distinct ideas, and his metaphysical dualism of mind and body.
 2. Hobbes’s primary concerns were political, and he grounds his analysis on a realistic assessment of human psychology and motivation. The “laws of nature” he proffers are purportedly scientific truths that can be rationally demonstrated.
 3. Spinoza embraced monism and, thus, reduced the entire cosmos to the realm of mechanical nature. The result of this thinking was an affirmation of determinacy that was both metaphysical and psychological.
- B. The fideists used skepticism to argue that because one could not have certain knowledge on a purely rational basis, one ought to resort to faith on the most central issues that face us.
1. Pierre Bayle dramatized the conflict between faith and reason to argue for the priority of faith. Ultimately, however, this proved a losing battle when many of his subsequent sympathetic readers would interpret his skepticism as irreligious in intent.
 2. Blaise Pascal stressed the centrality of faith and God for the most basic and important questions in our lives. Questions of truth, mortality of the soul, and the existence of God give meaning and direction to our existence; the importance of these issues is highlighted in his famous wager.

- IV. The seminal work of Sir Isaac Newton brings the Age of Reason to a close and marks the onset of the Age of Enlightenment.
- A. Newton firmly established the authority of modern mathematical science and its deductive-experimental method.
 - B. Newton’s adoption of the principle of “action at a distance” signaled the end of primary causes in favor of secondary causes as the mode of scientific investigation, as subsequent physicists would reject ultimate causes for more proximate and measurable ones.
 - C. Despite his own pietism, Newton’s achievement would encourage many of his admirers to embrace natural religion (and deism in particular) over Christian revelation. Newton’s mechanics would give rise to the image of the universe as a vast clockwork designed by a deity who simply wound it up and left it to its own inexorable workings.

Essential Reading:

Ernst Cassirer, *The Individual and the Cosmos in Renaissance Philosophy* (New York: 1963).

Frederick, S.J. Copleston, *A History of Philosophy* (New York: 1985), Book II, Vol. I, pp. 1–62.

Questions to Consider:

1. If the Age of Reason dismissed all traditional authorities, what authority did it pose in their place?
2. What were the primary differences between the Renaissance of northern and southern Europe?

Lecture Twenty-Six

Machiavelli and the Origins of Political Science

Darren Staloff, Ph.D.

Scope: As a premier work of political realism, Machiavelli's *The Prince* marks a sharp departure from the classical idealist tradition associated with Plato. The book's "hero," Cesare Borgia, is a cold-hearted, unscrupulous, calculating despot. The word "Machiavellian" has come to refer to a sinister, cunning person who ruthlessly pursues personal power in the manner described in *The Prince*. This lecture will explain Machiavelli's purposes in writing *The Prince* and outline his practical advice for gaining and keeping political power.

Outline

- I. *The Prince*, by Machiavelli (1467–1527), represents the rebirth of the classical tradition of empirical political speculation. It is a practical work on how to acquire, secure, hold, and improve princely power. Its stark realism and proto-nationalism prefigure political thinking and practice in the centuries that have followed.
- II. All principalities are either based on heredity or are newly founded. The former are easy to maintain as long as tradition is respected. The latter, however, are somewhat more difficult to control, and the precise difficulty in such a situation depends on certain fundamental circumstances.
 - A. If the kingdom has the same culture and language as the prince, he need simply eliminate all the members of the old royal family.
 - B. A new kingdom of a different language and culture is much more difficult to hold and requires the exercise of skill to maintain power. The prince should reside in the new territory, plant colonies at strategic locations in the new principality, and side with his less powerful neighbors against his more powerful rivals, similar to Rome's expansion into Sicily.
- III. All principalities are governed with the aid of either appointed ministers or hereditary barons. The prince will always have more power in the former than in the latter.
 - A. Regimes with ministers are difficult to conquer but easy to hold, as with Alexander's conquest of Persia.
 - B. Regimes with barons are easy to conquer because they are decentralized, but they're difficult to hold.
- IV. Free cities are extremely difficult to conquer and hold because of their traditions of independence and liberty. Once acquired, the prince can either despoil the city, reside there himself, or give the city autonomy under a friendly local elite and take tribute.
- V. Private citizens who rise to become princes do so either through their own efforts and abilities or through fortune or the efforts of others.
 - A. The former group finds it difficult to acquire new possessions because of the new rules they must impose. Once obtained and reformed, however, these territories are easy to hold.
 - B. Those who become princes through fortune or the efforts of others have an easy ascent to power but a tough time holding onto it, dependent as they are on their benefactors, as in the case of Cesare Borgia.
- VI. Some princes rise to power through villainy, while others are elevated to the position by fellow citizens.
 - A. In the case of the villainous prince, the prudent ruler will commit all acts of cruelty at once, softening his rule afterwards, again, as in the case of Borgia.
 - B. A prince elevated by his fellow citizens will need to play the nobles against the people. It's wiser to side with the people than with the elite. The prince should also make sure that the people always need him.
- VII. In addition to good laws, the basic foundation of any regime is a sound military.
 - A. The prince must study the military arts and their historical practice.
 - B. Armies are made of mercenaries, auxiliaries (the forces of allied nations), or a national militia. The first two are rife with deficiencies. The militia, more trustworthy, is the only safe form of army.
- VIII. It is better for a prince to have the reputation for niggardliness than to be too liberal with his resources.
- IX. It is sometimes better to show cruelty than clemency.
 - A. It is always better to be feared than loved, because love is fickle, but fear is constant.
 - B. Fear need not and should not bring hatred. The key to avoiding hatred is to never take the property of citizens.
- X. The prince should have the reputation for honesty, integrity, and religion, but not always the reality. Noble force and deceitful cunning must sometimes be used. For princes, the end justifies the mean.

Essential Reading:

Niccolo Machiavelli. *The Prince* (Hackett, 1995).

Supplementary Reading:

Bertrand Russell, *A History of Western Philosophy* (New York: 1972), pp. 504–512.

Frederick, S.J. Copleston, *A History of Philosophy*, Book I, Vol. III (Image Books, 1985), pp. 315–320.

Felix Gilbert, *Machiavelli and Guicciardini: Politics and History in Sixteenth Century Florence* (New York: 1984).

Hanna Pitkin, *Fortune Is a Woman: Gender Politics in the Thought of Niccolo Machiavelli* (Berkeley, 1984).

J. G. A. Pocock, *The Machiavellian Moment: Florentine Political Thought and the Atlantic Republican Tradition* (Princeton, 1975).

Leo Strauss, *Thoughts on Machiavelli* (Chicago: 1984).

Questions to Consider:

1. What does Machiavelli regard as the main duty of a prince? What must the prince do to fulfill this duty?
2. How can one reconcile Machiavelli's praise of republicanism in *The Discourses* with his championing of monarchical rule in *The Prince*?

Lecture Twenty-Seven**More's Utopianism**

Darren Staloff, Ph.D.

Scope: Thomas More's *Utopia* is a Christian-humanist view of an ideal society. More offers this vision not only as a mental ideal, but also as one that humans can strive to create in this world. The text is a self-conscious effort by More to offer his readers a Christianization of Plato's *Republic*. This lecture will review the features and significance of More's ideal system, highlighting its similarities to, and divergences from, Plato's utopia.

Outline

- I. Sir Thomas More was a Renaissance man, a Christian saint known for his piety, devotion, and integrity; beheaded for not acknowledging Henry VIII's rule of the English church; a member of Parliament, a diplomat, an ambassador, and Lord Chancellor of England. He was also a man of great learning and wit. Associated with the northern Renaissance, he tried to wed the Christian ethos with ancient wisdom.
- II. More's book, *Utopia*, is the last great Christian synthesis of the Renaissance.
 - A. The Christian aspect of the synthesis is Christ's gospel of caring for the poor, the oppressed, and the downtrodden.
 - B. The Platonic, Republican tradition is the Greek aspect of the synthesis.
 - C. More wrote the *Utopia* with a comedic tone, allowing him to speak his truth while telling his deeper story esoterically.
- III. *Utopia* takes the form of a dialogue led by a Socratic wise man, Raphael. The first book sets the stage for all that is to follow, and the second book is an exposition of the communal, social, and political arrangements of the Utopians.
- IV. Book II details the actual workings of the Utopian society.
 - A. Utopia was very similar to England in its physical topography, which serves to highlight the idea that this was not just a "Utopian scheme," but a legitimate form of Christian reconstruction.
 - B. Utopian society is characterized by the communal ownership of property.
 1. All property in Utopia was owned by the community and all production, except agriculture, was located in the household.

2. Trades were assigned on the basis of aptitude and choice, and the household was the locus of all production. All houses were maintained publicly, without locks.
 3. Utopians treasured leisure—not for the sake of idleness, but to spend their time in hobbies and the pursuit of various avenues of self-improvement.
 4. Utopians don't perform some tasks, such as butchering animals, for which they have slaves.
 5. Marriage was for love, not by arrangement.
- C. The politics of Utopia were based on a combination of English parliamentary government and Platonic Republicanism.
1. Political issues were never spoken of outside of chambers, and no legislation could be discussed on the day it was introduced. Thus were factions and negotiation prevented.
 2. Utopia had an elected parliament with a prince elected for life. The parliament's function was to allocate goods and labor to the individual towns, as well as to set foreign policy and create new colonies. The parliament didn't pass laws, because society, lacking private property, didn't need them.
 3. Teachers, priests, and rulers were chosen from the intellectual class.
 4. Commerce was important for acquiring iron and precious metals.
 5. Utopians fought wars for only three reasons: to defend their territory, to defend the territory of an ally, or to liberate oppressed people. They sign no treaties with their allies but are capable of deviousness when fighting wars.
 6. Everyone, including women, is trained for combat in case Utopia must be defended, but the Utopians leave the spoils of war to their allies. They extend quarter to the noncombatants of their enemy-states.
- D. Utopian culture combined the best of the ancient and Christian traditions.
1. Utopians are nonsectarian monotheists who practice religious toleration.
 2. Utopian moral theory is “eudaemonic”—or happiness-oriented—and informed by a “higher” hedonism, much as in the Greek tradition of Epicurus. Pleasures don't include gambling, fine clothing, excessive intake of food and alcohol, and the like.
 3. The highest pleasures are those that center on the contemplation of a higher truth and the realization of a life well lived.

Supplementary Reading:

- Frederick, S.J. Copleston, *A History of Philosophy* (New York: 1985), Book I, Vol. III, pp. 320–322.
- Bertrand Russell, *A History of Western Philosophy* (New York: 1972), pp. 512–522.
- Jack H. Hexter, *More's Utopia: The Biography of an Idea* (Greenwood, 1952).
- Edward I. Surtz, *The Praise of Pleasure: Philosophy, Education, and Communism in More's "Utopia"* (Cambridge, MA: 1957).
- Karl Kautsky, *Thomas More and His Utopia* (Humanities, 1980).

Questions to Consider:

1. Compare and contrast the governments of More's utopia and Plato's ideal republic.
2. How similar is More's moral eudaemonism to that of the classical Greeks?

Essential Reading:

Thomas More, *Utopia* (New York: 1965).

Lecture Twenty-Eight

Erasmus Against Enthusiasm

Jeremy Adams, Ph.D.

Scope: This lecture examines the commitment of Erasmus, the most outstanding Christian humanist of the northern Renaissance, to oppose excessive enthusiasm in any religious or intellectual matter. This distinctive feature of his work, his message, and his enduring tradition sprang from the circumstances of his early life and education and marked most of his copious and profitable literary output. It expressed itself most memorably in his famous satire, *The Praise of Folly*, and in a painful exchange of letters between himself and Martin Luther over the place of free will in human salvation. Generally rejected by most parties to the ferocious religious controversies of the next century and more, Erasmus has emerged again as a compelling voice of reasoned culture.

Outline

- I. Desiderius Erasmus of Rotterdam (1469?–1536) was the outstanding Christian humanist of the northern Renaissance. He was a model of disciplined scholarship, literary elegance, refined friendship, severe personal piety, and tolerant awareness of the need to avoid conflict in resolving issues as likely to wound spirits and shed blood as to find and establish truth. He spent his life fighting ignorance and superstition, but he came to find enthusiasm almost as dangerous.
- II. Erasmus's model life.
 - A. Erasmus was the illegitimate son of a rural priest who overcame the embarrassment of his origins by becoming a youth of self-restraint and deep study.
 1. He studied at the Augustinian monastery in Holland, then at the Montaigu College of the University of Paris, but he never graduated; he deeply disliked the scholastic rigidity, the puritanical discipline, and the miserably bad food of the latter.
 2. Going beyond his teachers and their courses of study, Erasmus perfected Petrarch's style of Latin prose and became the first western European competent enough in Greek to edit the Greek New Testament.
 - B. Erasmus's reputation as a man of letters was unsurpassed in western Europe during his lifetime. His complete works comprise 150 volumes of moderate size.

1. Erasmus never *needed* any of the many posts he was offered. He may be the first person in history to have made a good living entirely from his writing (always in Latin, his "first" language).
 2. He wrote copiously in several genres: formal letters (a favorite literary genre of the Renaissance); model conversations to improve one's Latin; treatises on a wide range of subjects, including biblical criticism, church reform, Christian ethics, and Christian theology; and satire.
- C. Perhaps the most readable of Erasmus's works today is *The Praise of Folly* (*Encomium Moriae* in its original punning title; Erasmus dedicated it to his good friend Thomas More, who loved jokes). It was published in Paris in 1511.
 1. The central character is Moria, Folly herself, who preaches a sermon on wisdom that is a model of rhetorical conventions (which all too easily become foolish). In the course of her sermon, Folly attacks practically every contemporary human commitment—not only foibles and fads—and ends up exalting the divine folly of the cross, by means of which God chose to redeem his foolishly fallen human creature.
 2. This is a highly complex and elusive piece of work. Erasmus seems to be saying that going too far with any enthusiasm is folly; God cannot commit excess, so the incarnation and crucifixion are not folly, however extreme and incomprehensible they may seem to us. But every human commitment, however good essentially, may be rendered foolish and worse by going overboard. Enthusiasm is an apparent virtue to be dreaded, or at least to be treated with great caution.
- III. Erasmus's distrust of enthusiasm was central to his thought and literary output.
 - A. Throughout his work, Erasmus attacked the superstition that had encrusted the message of the Gospel.
 1. Contemporary Christians needed to forgo the piety of pilgrimages to the shrines of saints and the frenzied acquisition of indulgences that reached a climax in the early sixteenth century (thanks to the fiscal requirements of a worldly papacy). Instead, Christians needed to cultivate (as Erasmus said and wrote over and over) the *philosophia Christi*, the philosophy of Christ. By this, Erasmus meant the life of the gospels, as well as (perhaps rather than) any formal doctrines.
 2. He strongly recommended classical authors who propounded the golden mean.
 - B. When Martin Luther first attacked the indulgence trade in 1517, Erasmus was in favor of his protests. He also supported Luther's attack on the general corruption of the papacy and his insistence on reading

the Bible directly rather than listening to scholastic interpretations of Scriptural doctrine.

C. But when Luther developed a stringent interpretation of the doctrine of predestination, denying any role to the freedom of the human will—a corollary about which Luther was both logical and enthusiastic—Erasmus could not go that far.

1. In 1521, ten years after he published *The Praise of Folly*, Erasmus began a correspondence with Luther on these points. Luther's literary style was powerful, and he could be corrosive in disagreement. As the exchange progressed, Luther became verbally abusive, even grossly vulgar.
2. By 1524, Erasmus had definitively broken with Luther. Erasmus, the instinctive humanist, was determined to find some place in the process of salvation for the free choice of humans to cooperate with God's grace. He could not stand the notion that God was a tyrant, cruelly (if somehow justly) predestining some to eternal torment.
3. Here, Erasmus thought, was another case of a good man seduced by enthusiasm.

IV. Erasmus died a dozen years after he had parted ways with the enthusiastic reformer Luther. He died in 1536, the year the young John Calvin published his *Institutes of the Christian Religion*, perhaps the classic statement of Protestant Christianity with predestination as its cornerstone—not a book Erasmus would have liked. He was not unhappy to die, having outlived the humane Renaissance, the most optimistic phase of which he had embodied with such sober brilliance.

- A. Erasmus's legacy lived on, reaching a second peak in the ecumenical movement of twentieth-century Christianity—Christian, not secular, humanism.
- B. Before that, it inspired the most tolerant wings of western Europe's established national churches, such as the exceptional religious tolerance of the established Dutch Protestant church and of Polish Catholicism until the late eighteenth century. In England, it inspired the “low-church (and High-Church) latitudinarianism” of eighteenth- and nineteenth-century Anglicanism.
- C. In a more secular vein, Erasmus's condemnation of enthusiasm, even in what might seem a good and idealistic cause, inspired Edmund Burke's defense of tradition and of what seemed irrational “prejudice” during the French Revolution.

Supplementary Reading:

Erasmus, *The Praise of Folly*, translated by Hoyt Hudson (Princeton, 1941).

Johan Huizinga, *Erasmus*, many editions and several translations since 1924, translated by F. Hopman. The most recent edition is by Phaidon, 1995.

Roland Bainton, *Erasmus of Christendom* (New York: 1969), paperback, 1988.

George Faludy, *Erasmus of Rotterdam* (London: 1970).

Questions to Consider:

1. “Enthusiasm” is a very positive word in twentieth-century American English. Do you understand Erasmus's sense of its potential dangers?
2. Is there an inherent contradiction between humanism and enthusiasm?

Lecture Twenty-Nine

Galileo and the New Astronomy

Alan Kors, Ph.D.

Scope: Astronomy, focused on the immutable heavens, was an eminent science in the seventeenth century, and it is not accidental that so much of the challenge to scholasticism began in that field of inquiry. The astronomy adopted by the Aristotelian scholastics was that of Claudius Ptolemy (second century AD), which fit wonderfully with their system. Among the challenges to Aristotelianism in the early modern age was neo-Pythagorean thought, which viewed the universe in terms of mathematics and geometry, not in terms of Aristotelian “qualities,” and saw the sun as an emblem of God’s divinity.

Copernicus, in the sixteenth century, and Johannes Kepler (1571–1630), in the seventeenth, sought to create a more harmonious view of the heavens by placing the sun at the center of the system. Kepler, driven by neo-Pythagorean passions and heir to better data than his predecessors about the heavenly bodies, devised three laws of planetary motion that he believed disclosed God’s mathematical order in the universe. Galileo (1564–1642) did not accept Kepler’s laws (which would not be proven until Newton), but he did polemicize for the heliocentric astronomy and for a quantitative rather than qualitative view of nature. He castigated the scholastics for their blind adherence to human books rather than an inquiry into God’s book of nature; he criticized the use of Scripture as a scientific textbook; and he urged observation, reason, and mathematical proofs, all dealing with the quantities of nature, as the means to know the creation. Kepler and Galileo represent a great enthusiasm of the seventeenth-century mind, the belief that they were observing God’s actual work with understanding for the first time. Galileo’s demanding methodology in the sciences and his struggle against those Aristotelians who controlled offices of censorship and philosophical conformity in the church became emblems and foundations of the attempt at a rigorous and free natural philosophy.

Outline

- I. The state of astronomy in scholastic thought derived from the ancient world.
 - A. The astronomy that the Aristotelian scholastics had adopted was that of the Greek astronomer Ptolemy, which seemed wonderfully consistent with their philosophical and theological systems.

- B. Ptolemaic astronomy held that the earth was at the center of the universe. The moon, planets, sun, and an orb of fixed stars revolved around the earth in perfect circular motion.
- C. The corrupt, changing world existed below the moon; above the moon were the unchanging heavens.

- II. Among the intellectual movements that arose to challenge Aristotelian scholasticism was neo-Pythagorean thought. Where the scholastics viewed God’s creation in terms of perfections and purposes, the neo-Pythagoreans viewed it in terms of mathematics and geometry.
 - A. The worldview of Aristotelian scholasticism was qualitative, not quantitative, in its conception of the universe and of natural phenomena; it was essentialistic and teleological in its view of motion.
 - B. For the neo-Pythagoreans, the divine mind, God, expressed itself in the order, harmonies, and ratios of the creation. Reality emanated from the Divinity itself and was numerical and geometrical.
 - C. The Pythagoreans worshipped the sun; neo-Pythagoreans saw the sun, a luminous perfect circle, as an emblem of the Divinity.
- III. The work of Johannes Kepler reveals both the fusion of neo-Pythagorean number mysticism and natural philosophy, on the one hand, and, on the other, the fruitfulness of a quantitative science.
 - A. Copernicus’s unproven heliocentric hypothesis deeply affected Kepler.
 - B. Kepler believed that with the sun at the rightful center of the universe, the quantitative and geometrical harmonies and ratios of God’s creation would be disclosed.
 - C. Using the work of astronomer Tycho Brahe, Kepler went through an ordeal of mathematical hard labor to arrive at his first two laws of planetary motion:
 - 1. The planets, including the earth, described elliptic, not circular, orbits around the sun.
 - 2. The line joining a planet to the sun—the radial vector—swept out equal areas in equal times.
 - D. Kepler loathed the “imperfect” ellipses. For ten more years, Kepler engaged in a computational struggle to find God’s harmony in this universe of ellipses. In 1619, he found it in his third law of planetary motion: the square of the period of revolution of a planet is proportional to the cube of its average distance from the sun.
 - E. The glory of the divine mind was evident in the creation, maintained Kepler. “I let myself go in divine rage,” he wrote in *On the Harmony of the World*, utterly confident in what he had accomplished.

- IV. Galileo's quantitative reality followed from Kepler's work, even as it offered an alternative.
- A. The mathematician Galileo, Kepler's admirer and fellow astronomer, could not accept Kepler's laws. They seemed too speculative to him, but he shared Kepler's sense that nature was to be understood quantitatively, not in terms of perfections or purposes.
 1. Galileo developed a method: induction from observation, deduction of hypothesis, experiment, and compelling demonstration of conclusions.
 2. Galileo's use of the telescope was revolutionary: he urged the power of observation and mathematical proof over the presumptive authority of tradition.
 - B. Galileo's most revolutionary assault upon Aristotelian scholasticism was not his Copernican astronomy—although this would get him in such great difficulty—but his rejection of qualitative perfections and his distinction between secondary versus primary qualities.
 1. Secondary qualities, in which category he placed almost all the Aristotelian qualities, were not real in the objects thus described but depended on human perception (e.g., sweetness and color).
 2. Primary qualities defined what truly existed apart from perception, the qualities of objects themselves, the reality of God's natural creation. These were all quantitative: dimension, shape, in short, the measurable.
 3. What scholastics called "perfections" were, for Galileo, human projections upon a natural world that was quantity or mass in motion, a world to be understood in terms of mathematical law.
 4. Empirical observation, mathematical ordering, and mathematical testing led to laws of motion. Motion described the relationship of bodies to time and distance; it did not express the perfections or purposes of things.
- V. Galileo struggled with the Aristotelians.
- A. Galileo argued explicitly against Aristotle and against the principle of intellectual authority. Facts are determined by nature, not by books or men—not even by the pope. Galileo insisted, however, reminding scholastics of Aristotle's commitment to induction, that "if Aristotle were here today, he would agree with me." He turned the scholastics' theory of knowledge against them.
 - B. With critics of the new astronomy insisting that Copernican hypotheses were contradicted by Scripture, Galileo distinguished between the two revelations from God: his book of nature, our source of knowledge about the creation, and his book of Scripture, our source of knowledge about salvation and things beyond nature.

- C. For Galileo, our senses, intellect, reason, and mathematical proofs are from God. Experience and mathematical logic were irrefutable because God's creation is the ultimate test. To read the book of nature, he wrote, one must know the language of line and geometry and number.
- D. The prosecution of Galileo affected both the substance and symbol of the new science.
 1. The effect on Descartes was great. Learning about the condemnation of Galileo, he stopped working on one book that wasn't published until after his death.
 2. Thus was created the symbolic Galileo, the "martyr" of science.
- E. The seventeenth-century mind knew great excitement: seventeenth-century authors, rejecting authority, believed that for the first time, with proper method, the human mind was looking on God's work with understanding.

Essential Reading:

Galileo Galilei, *Discoveries and Opinions of Galileo*, translated and edited by Stillman Drake (New York: 1957), particularly *The Starry Messenger*, *The Letter to the Grand Duchess Christina*, and *The Assayer*.

Supplementary Reading:

Galileo, *Dialogue Concerning the Two Chief World Systems*.

Questions to Consider:

1. Modern scientists often believe that seventeenth-century scientists were practical experimentalists just as they themselves are today. How different are Kepler and Galileo from modern scientists in their thought and work?
2. What changes in a view of nature when one moves from qualitative to quantitative description?

Lecture Thirty

Bacon's *New Organon* and the New Science

Alan Kors, Ph.D.

Scope: From the end of the sixteenth century until his death, Francis Bacon (1561–1626), politician and philosopher, undertook to criticize the Western intellectual inheritance, to transform the human quest for knowledge, and to alter the uses of power over the forces of nature on which our suffering or well-being depended. For Bacon, the causes of error were many (the Idols of the Mind) and separated us from understanding the world that God had created. The key to overcoming error was rightful method, which for Bacon meant induction from the particulars of nature to general principles that would be tested experimentally. Nature, not the errant mind, should determine the truth or falsity of our beliefs. Unable to refute Aristotelianism on its own terms, he appealed to the charity and power inherent in his model and redefinition of knowledge and to the advantages to both faith and natural philosophy if each were restricted to its proper sphere. His most essential work, *The New Organon*, argued that such an inductive, experimental science, free from the dead weight of the past, could yield a new kind of knowledge that would be dynamic, cumulative, and useful. His ultimate vision was that human beings, if governed by charity, could use knowledge to alter their relationship to nature and society on behalf of “the effecting of all things possible.”

Outline

- I. Bacon's dissatisfaction with tradition explains much of his subsequent work.
 - A. Francis Bacon's life reflected the changes occurring in the audience of higher education. He entered Cambridge University at the end of the sixteenth century, when the children of aristocrats and merchants were receiving the same education as that once reserved for clerics.
 - B. Bacon encountered the traditional Aristotelian education, but brimming with worldly ambitions and concerns. A contemporary of his wrote that at Cambridge, Bacon “first fell into the dislike of the philosophy of Aristotle...finding it a philosophy only strong for disputations and contentions, but barren of the production of works for the benefit of mankind.”
- II. In the early seventeenth century, Bacon began his momentous assault on the traditional philosophies.
 - A. Bacon argued, in a series of works, that the European philosophical tradition stood condemned on a number of grounds:

1. For mixing religion and natural philosophy (science), to the confusion of both. The universities had built on this confusion.
 2. For substituting concern for words in place of concern for things. Philosophers were admired for their rhetorical abilities, not because they understood the things of the world.
- B. For Bacon, European thought had become enslaved to the systems of five or six Greeks, systems that had infected Europe's relationship with nature. The Greeks were cloistered intellectuals who earned their reputation by a deft handling of words.
- III. Bacon, in two fundamental ways, sought to win readers to his redefinition of the goals of human knowledge.
 - A. New kinds and methods of knowledge would make possible an expansion of human empire over the phenomena on which our suffering or well-being depend.
 - B. He believed he could convince his audience that the Christian ethic entails knowledge in the service of charity, which means that the fruits of knowledge must permit one to enhance the condition of one's fellow creatures, not merely to be used for enhancing one's fame and reputation. Let the latter kind of knowledge, he wrote, “be set at nought.”
- IV. *The New Organon* was an audacious challenge to Aristotle's *Organon*.
 - A. Bacon's most essential work was *The New Organon*, the new instrument or method for acquiring useful knowledge. He reversed the model of received tradition—the ancients were children, he argued, on whose work we build with added experience. *The New Organon* had four essential and profoundly influential themes:
 1. Knowledge is human power. Knowledge is the ability to navigate, to grow crops, to avoid human starvation.
 2. Natural philosophy (science) must be separated from theology. Natural philosophers or theologians should not interfere in each other's disciplines.
 3. The method of induction, from particulars to generalizations, is tested by experiment. The question is not what follows from a given axiom but from observing the particulars of the world.
 4. Science is a dynamic, cooperative, cumulative enterprise. Science is always self-correcting.
 - B. Bacon cautioned Christians against worshiping false “Idols of the Mind” rather than God's actual creations.
 1. The Idols of the Tribe are inherent in human nature: impatience rather than caution.
 2. The Idols of the Cave are the particular biases of the individual man, which derive from education, psychology, need.

3. The Idols of the Marketplace are the ambiguity of words, the currency by which knowledge is traded.
 4. The Idols of the Theater, our received philosophical tradition, is worshipped under the notion of Authority, whether Aristotle, Pliny, or Galen.
- V. In the *New Atlantis*, Bacon treats the place of natural knowledge in society.
- A. In Bacon's portrait of utopia, human beings govern their relationship to nature and society on behalf of their own interest in human well-being.
 - B. The instrument of mankind's betterment was knowledge methodically drawn from patient observation and experiment "to the [end of] effecting all things possible."

Essential Reading:

Francis Bacon, *Novum Organum*, translated and edited by Peter Urbach and John Gibson (Chicago: 1994), Introduction and Book One.

Supplementary Reading:

Francis Bacon, *The Complete Essays of Francis Bacon, including The New Atlantis*, edited by Henry LeRoy Finch (New York: 1963).

Questions to Consider:

1. Why, for Bacon, is fundamental philosophy so essential to charity?
2. When later scientists, including Newton, describe themselves as "Baconian," what parts of his system did they take or not take as their own?

Lecture Thirty-One

Descartes – The Method of Modern Philosophy

Alan Kors, Ph.D.

Scope: From (at least) the time of Plato, it has been a dream of Western philosophy to know things as they truly are, in and of themselves, undistorted by the human senses, passions, and perspective. In the seventeenth century, Descartes embodied that dream and created a coherent philosophical system that became, on the Continent, the major challenge to the scholastic hegemony, arousing great enthusiasms and projects. Descartes sought to demonstrate that we could establish a criterion of truth and, with it, know with certainty the real nature and the real causes of things. For his legions of disciples, Descartes's work accomplished this and more. It freed philosophy from authority and from the Aristotelians; it explained the nature of ideas, knowledge, and the source of error; it refuted the skeptics who denied the possibility of certainty; and it "proved" God and the immortality of the soul. The work of Descartes also demonstrated that the physical world was matter in motion according to the laws of mechanics, making possible a rigorous new quantitative science of all physical reality, and established the absolute distinction between body and mind, that is, between matter and spirit. In all of these things, Descartes's thinking challenged scholasticism in the most fundamental ways and altered the nature and problems of Western philosophy and science. Dramatically, it bequeathed to contemporaries a categorical dualism: the world divided into mind or body, mental or physical domains. That legacy, "the mind-body problem," has been one of the most enduring aspects of post-Cartesian Western philosophy and thought.

Outline

- I. René Descartes sought to reconstruct all of human knowledge. His work, Cartesian philosophy (from the Latin, *Cartesius*, of his name), became the great challenge to Aristotelian scholasticism in the seventeenth century, above all on the Continent.
 - A. Descartes spoke to the vision of ultimate philosophy: Plato's cave (knowing things in themselves, as they really are). In Plato, the philosopher is the sole one to step outside the cave and sees things as they really are.
 - B. Descartes's dream was to gain a perfect knowledge of being and of causes, the knowledge of why and how things happen.
 - C. Descartes's appeal crossed the entire spectrum of European interests, from mechanistic scientists to mystical theologians.

- II.** The Cartesian drama presents a dilemma: Why does a thinker come to define the options of an intellectual age?
- A.** First, many vital or troubling issues of the period converge in Descartes's work.
 - B.** The Cartesian response to five primary convergences, in particular, aroused great enthusiasm:
 - 1.** The epistemological crises of the Reformation—the supreme authority of the Church had been questioned.
 - 2.** The revival and appeal of classical skepticism—skepticism argues that it is impossible for the human mind to know anything with certainty.
 - 3.** The specter of libertinism and the new Pyrrhonism—the latter school maintained that even uncertainty couldn't be claimed with certainty.
 - 4.** The neo-Pythagorean revival—the great concern for seeing the quantitative truth of nature.
 - 5.** The assault on Aristotle and all Aristotelian authority.
- III.** Descartes's *Meditations* was a quest for non-Aristotelian certainty.
- A.** The hyperbolic doubt of Descartes goes beyond even the skeptics and their critics. He argues that we can't even distinguish between states of dreaming and waking.
 - B.** The "cogito ergo sum" is a clear (self-evident) and distinct (independent) idea. "I think therefore I am" is indubitable.
 - C.** Descartes needs to prove God and soul to satisfy Christian demands: to fix certainty; to demonstrate the system.
 - D.** A body might be illusion, but thought exists as something independent of matter—from it derives the soul, the very essence of which is thought.
 - E.** Descartes offers two proofs of God on the metaphysical side.
 - 1.** The first is an argument from objective cause: the idea of a perfect being could only come from an infinitely perfect being.
 - 2.** The second is an argument from necessity: a perfect being must have existence in order to be perfect. Nonexistence would be a contradiction in terms for such a being.
- IV.** Descartes's physics caused at least as much intellectual excitement as his metaphysics.
- A.** Descartes's distinction between the essences of soul and body leads to Cartesian dualism: immaterial soul and material body.
 - B.** The essence of soul is thought; the essence of body is extension in height, width, and breadth.

- C.** What *can* be known about extension? Descartes reached basically the same conclusion that Galileo did: the physical world is dimension, motion, and the mechanisms of matter touching and communicating force to matter.
 - D.** Given God's will, Descartes proposed fixed mechanical laws of motion, from which he deduced inertia. The task of a new science was to discover the laws, mechanisms, and effects of matter in motion.
- V.** The Cartesian legacy is profound.
- A.** In dualism, God has created soul and body, mind and matter.
 - B.** This dualism leads to natural mechanism and materialism.
 - C.** But this split reveals the mind-body problem, a difficulty that will haunt Descartes, his followers, and all of Western philosophy.
 - D.** Cartesians led the assault on superstition and belief in witchcraft.
- VI.** In conclusion, we consider the mixed bequest of Descartes.
- A.** Per Descartes, how do we explain the interaction of spirit and matter in human life? Or the Eucharist? Or the concept of miracle—if everything physical happens by natural causes?
 - B.** The implications for authority—Aristotle—and the concept of natural knowledge were extraordinary, overturning much of the Greek tradition.
 - C.** Descartes created the mind-body problem and attempted to resolve it.
 - 1.** Descartes's "solution," the pineal gland, attracted few adherents.
 - 2.** Idealism, based on the premise that matter doesn't exist, was one resulting school.
 - 3.** Materialism, the idea that all mental phenomena derive from the body, was another.

Essential Reading:

René Descartes, *Meditations on First Philosophy*, edited and translated by John Cottingham, revised edition (New York: 1996).

———, *The Passions of the Soul*, translated by Stephen Voss (Indianapolis: 1989).

Supplementary Reading:

René Descartes, *Discourse on Method*. Scores of editions and translations of this profoundly influential work are available. Read any unabridged edition.

Questions to Consider:

- 1.** In the final analysis, does Descartes's system strengthen or weaken the relationship between theological and scientific questions?
- 2.** Why is the mind-body interaction such a dilemma in the Cartesian system?

Lecture Thirty-Two

Hobbes—Politics and the State of Nature

Dennis, Dalton, Ph.D.

Scope: Thomas Hobbes lived during a period of international and civil war in England. This experience of turmoil and crisis is reflected in his political theory, which is an attempt to legitimize a state of order and peace.

Hobbes based his political philosophy on a theory of human nature. He asserted that people are ruled not by reason but by passions, especially the desire for power and the fear of death. If we imagine people in a state of nature or in their natural condition, without a state to control them, we would see a violent existence in which everyone is at war with one another.

The remedy for this natural inclination to violent, aggressive behavior is to establish a powerful state, called the Leviathan, and ruled by an absolute sovereign. This omnipotent state would be legitimized by a contract, born of desperate fear of anarchy; such an agreement would clearly be in the interest of each individual, because people seek peace and a sovereign of the Leviathan could ensure it.

Outline

- I. The English philosopher Thomas Hobbes was born in 1588, a time of tremendous turmoil.
 - A. The wars of religion engulfed Europe. Hobbes was born in the year the Spanish Armada threatened to invade England; his mother, fearful of the invasion, gave birth to him prematurely.
 - B. The circumstances of his birth are significant, because they constitute a metaphor for his whole political philosophy.
 - C. The ultimate justification of the state, Hobbes would reason, was the protection it offered. The stronger the state, the better it will protect us.
- II. Hobbes's great work of political philosophy is *Leviathan*.
 - A. *Leviathan* is a brilliant book, because it offers systematic logic in asserting a science of politics.
 - B. Hobbes thinks of himself as a physician who has analyzed the disease of violence in humankind. He wants to find a remedy for that disease.

- III. His theory of human nature argued that we are not guided by reason, but passions. Hobbes grouped passions into two categories: appetites or desires (those that we move toward) and aversions (those that tell us to move away).
 - A. Hobbes attributed “good” to appetites and desires (representing pleasure) and “bad” to aversions (representing pain). Happiness consists of nothing more than continual success in satisfying one’s desires. Passions are not determined by sin or metaphysics, but by the pain/pleasure calculus.
 - B. The strongest human passions are the desire for power and the fear of violent death.
 1. The struggle for power ends only in death; it cannot lead to permanent tranquility.
 2. Humans in the state of nature fear each other as potential murderers; they are driven by fear to seek even more power, which frightens others into seeking power for their own self-defense. The inability to attain total security arises from this vicious cycle of fear-defense-fear, not from any innate human aggressiveness or avariciousness.
 3. Constant fear of death thus motivates our chronic state of insecurity and anxiety.
- IV. Hobbes described the human predicament in the state of nature as a futile search for peace, security, and order.
 - A. Whereas Plato used education to transform people’s attitudes, Hobbes relied not on reason, but on human passions to rescue people from their condition of pervasive insecurity.
 - B. Humans in the state of nature fail to attain peace and security because their efforts to do so instill fear in others, trapping all in a vicious cycle. We appear like wolves when we are really sheep in wolves’ clothing.
 - C. According to Hobbes, the only way to escape this cycle is to create a higher authority—an all-powerful state that can obtain greater safety and security for human beings—to avoid fratricidal civil war.
 - D. He insisted that the general law of peace and peace-seeking is at the bottom of all human behavior.
 - E. Hobbes agreed with Plato that a healthy society requires the concentration of leadership and power in the right hands. Both Hobbes and Plato begin with a perception of crisis arising from civil war; they differ on its causes and remedies. Hobbes’s analysis of human nature, his theory of leadership, and his concept of sovereignty developed the philosophy of realism.

- V. Hobbes restates the critique of justice offered in *The Republic* by Glaucon, the first exponent of social contract theory.
- A. According to Glaucon, human beings—who individually are too weak to dominate each other—form a contract to ensure their own self-preservation. Justice consists in their agreement not to attempt to dominate each other.
 - B. *Leviathan's* main theme is the commonwealth, which men regard with awe and against which they seek protection.
- VI. Hobbes described the origins of the state.
- A. He did not view the state of nature as a purely historical period or condition. We can revert to the state of nature at any time.
 - B. The passions that incline men to seek peace are fear of death and desire for security.
 - C. Humans cannot ensure their own peace and security by themselves. They must fashion a covenant under which they transfer their rights and power to a sovereign.
 1. The contract establishes a common power that will leave the people in awe and direct their actions toward a common good.
 2. Men can achieve peace, order, and security only by conferring all their power and strength on one man or assembly, thereby reducing their multiple wills to one.
 - D. Individual human beings authorize the sovereign to assume and exercise all their rights and powers for the sake of ensuring their own peace and security.
 1. The sovereign is not a party to the social contract and, thus, its power is not limited by its terms.
 2. The sovereign holds all executive, legislative, and judicial powers. It has power over all private and public property. (Locke views the right to property as unalienable.)
- VII. The legitimacy of the contract depends on the sovereign's ability to ensure personal security.
- A. Each subject retains the right to his own life.
 - B. Hobbes is not an authoritarian; he established the principle of the state's legitimacy as rooted in the self-interest of each person.

Essential Reading:

Thomas Hobbes, *Leviathan* (New York: 1968), pp. 74–408.

Supplementary Reading:

Bertrand Russell, *A History of Western Philosophy* (New York: 1972), pp. 546–557.

Frederick, S.J. Copleston, *A History of Philosophy* (New York: Image Books, 1985), Book II, Vol. V, pp. 1–31.

Crawford B. MacPherson, *The Political Theory of Possessive Individualism: Hobbes to Locke* (New York: 1962).

Michael Oakeshott, *Hobbes on Civil Association* (Berkeley: 1975).

Richard S. Peters, *Hobbes* (Westport, CT: 1979).

Arnold A. Rogow, *Thomas Hobbes: Radical in the Service of Reaction* (New York: 1986).

Steven Shapin and Simon Schaffer, *Leviathan and the Air Pump* (Princeton: 1985).

Sir Leslie Stephen, *Hobbes* (Ann Arbor: 1961).

Howard Warrender, *The Political Philosophy of Hobbes: His Theory of Obligation* (New York: 1957).

Questions to Consider:

1. Compare and contrast the views of Plato and Hobbes on the interaction between reason and the passions or appetites. How do their differing views of human nature contribute to their differing political conclusions?
2. How does Hobbes's materialism influence his understanding of ethics and moral choice?
3. How might one reconcile Hobbes's preference for absolute monarchy and his apparent predilection for authoritarianism with his reputation as one of the founders of liberalism?
4. According to Hobbes, what is the source of legitimate political authority? In what does this legitimacy consist and how, if at all, can it be lost?

Lecture Thirty-Three

Spinoza—Rationalism and the Reverence for Being

Darren Staloff, Ph.D.

Scope: This lecture examines the metaphysical and ethical ideas of Baruch Spinoza, one of the most brilliant and challenging thinkers in the Western philosophical tradition. Spinoza's principal work, *The Ethics*, offers a brilliant expression of his metaphysical monism. He argued that the universe is reducible to a single substance, which he identified as monads, rather than to two discrete substances—mind and body, as Descartes had it. Spinoza asserts that nature is not the creation of a supernatural God. Rather, he identifies nature as God. Spinoza believes that what is, is of necessity. Knowledge of this necessity gives power and virtue to individuals. Escape from desires through understanding is one of the benefits of the ethical life.

Outline

- I. Baruch Spinoza is one of the most challenging thinkers in the Western philosophical tradition. Not only are his arguments extremely abstruse and technical, but his views are in many ways antithetical to the mainstream intellectual tradition of Europe.
 - A. Spinoza was the first modern philosopher to completely reject the Judeo-Christian theologies in the name of science and reason.
 - B. Spinoza also rejected any teleological interpretations of nature and man. The result is a mechanistic, deterministic view of nature.
- II. Spinoza was profoundly influenced by Descartes's philosophy. Given Descartes's epistemology and definition of substance, leading to dualism, Spinoza concluded that it is logically impossible for more than one substance to exist; hence, he subscribed to metaphysical monism.
 - A. Spinoza referred to the one world substance as "God, or nature." Such a pantheistic reverence for being is Spinoza's attempt to offer a purely rational and scientific form of spiritual nurturing.
 - B. Spinoza rejected Descartes's mind-body dualism, arguing instead that mind and body are two different attributes of the same substance, which could be described as extended or intellective. In our terms, mind and body comprise distinct descriptive protocols or different ways of talking about the same events or phenomena. A chess game, for example, can be described variously: by chess notation, physical description, or psychological means.

- III. Given the Cartesian epistemological view that intuitively clear and distinct ideas are true (i.e., they correspond to objective reality), Spinoza concludes that the causal nexus is identical to logical implication. Therefore, all causes are logically necessary.
 - A. Because every change and event has a cause, then everything is determined; there is no chance or accident in the universe, but rather lawlike behavior.
 - B. Because all natural events have a cause and humans are a part of nature, then all human actions are determined; free will is a logical impossibility and absurd.
 - C. Positing only the instinct of "connatus," or desire, and the principle of association, Spinoza, like Hobbes, demonstrates that each of the human emotions are causally necessary responses to external stimuli. He attempts to reduce complex relational states to fairly simple stimulus/response statements.
- IV. Spinoza argues that the well-being or happiness of humans is a function of their relative empowerment through their environment.
 - A. The capacity of the environment to induce powerful psychological states or emotions is the cause of human bondage.
 - B. Insofar as our disposition is caused by external events, these events control us, and we are merely passive.
 - C. The way to activity, or empowerment, is to use one's reason to understand the necessity of the emotions and, thus, therapeutically eliminate their control over the mind/body. Spinoza distinguishes between "active emotions" and "passive emotions."
 - D. Human salvation, or blessedness, consists in understanding the necessity of each of the events that occur in life and facing each with equanimity.
 1. Spinoza rejects the Stoics, arguing that one can achieve only relative freedom.
 2. Such a quasi-Buddhistic enlightened person would revere being and manifest his or her empowerment through a universal, rational love.
- V. Spinoza's influence on other rationalists, such as Leibniz, was profound.
 - A. His mechanistic determinism provided the high ground of the Enlightenment argument for materialism.
 - B. His pantheistic pietism strongly influenced such American philosophers as Jonathan Edwards and the nineteenth-century Romantics.

Essential Reading:

Baruch Spinoza, *The Ethics and Selected Letters*, translated and edited by Seymour Feldman (Hackett, 1982), pp. 1–226.

Supplementary Reading:

Frederick, S.J. Copleston, *A History of Philosophy* (New York: 1985), Book II, Vol. IV, pp. 214–263.

Bertrand Russell, *A History of Western Philosophy* (New York: 1972), pp. 569–580.

Siegfried Hessing, ed., *Speculum Spinozenum: 1677–1977* (Methuen, 1978).

Leo Strauss, *Spinoza's Critique of Religion* (Schocken, 1982).

Marjorie Grene and Debra Nails, eds., *Spinoza and the Sciences* (Kluwer A.C., 1986).

R. Willis, *Spinoza: His Life, Correspondence and Ethics* (Gordon, 1977).

Questions to Consider:

1. How does Spinoza reconcile his rigid determinism with his emphasis on freedom as the goal of his philosophy?
2. How does Spinoza resolve the Cartesian problem of soul-body interaction?

Lecture Thirty-Four

Pascal—Skepticism and Jansenism

Alan Kors, Ph.D.

Scope: Blaise Pascal (1623–1662) was, with Pierre Bayle, one of the two most influential fideists. He abandoned a brilliant career in mathematics and the physical sciences to devote himself to piety and religious polemics. Pascal was a member of the Jansenist movement within French Catholicism, which stressed an Augustinian view of the catastrophic effects of the Fall on the human will and argued for the need for salvation by faith alone, a state achievable only by God's grace. Pascal's *Pensees*, his unfinished thoughts on religion, became one of the publishing sensations of the seventeenth century. It stressed the misery and absurdity of man and human life without God, the insufficiency of intellectual knowledge of God or knowledge of God without Christ, and the role of grace and the heart in faith. In the light of such faith, for Pascal, what seemed incoherent and self-contradictory about the world fell into place, similar to certain paintings looked at from the appropriate perspective.

Outline

- I. Skepticism is another systematic philosophical assault on the dominance of Aristotelian scholastic thought.
 - A. Deep skeptical strains existed in the seventeenth century about the claims of human knowledge.
 - B. Fideism was the dominant form of seventeenth-century skepticism.
 1. It held that human knowledge cannot attain significant certainty.
 2. It also held that this weakness should convince us of our dependence on faith and God's grace.
 - C. The two influential models of fideism in the seventeenth century were:
 1. Pierre Bayle—a Protestant.
 2. Blaise Pascal—a Catholic.
- II. Pascal became involved with the heretical sect known as Jansenism.
 - A. Pascal, a child prodigy in mathematics, began a brilliant scientific career. He worked on conic sections, cycloid curves, barometrics, fluid dynamics, pneumatics, and the mathematical calculus of probability. Many see his binary calculating machine as the first computer.
 - B. He abandoned his scientific career after his encounter with Jansenism, the continuation of the age-old contest between piety and natural knowledge.

- C. Within Catholicism, Jansenism was a continuation of the contest between Augustinianism and Thomism, the doctrines of Saint Augustine and Thomas Aquinas, respectively.
1. Jansenism views the effects of the Fall upon will and reason through the darkest Augustinian lenses.
 2. Its view of grace was that Jesuits and Thomists had ignored the personal encounter between the sinner and Christ and had substituted sacramental dispensation in its place.
 3. Antoine Arnauld discussed the scandal of frequent communion in the church. For Jansenists, Christ had not died on the cross to provide feigned redemption for people.
 4. For Jansenists, the church had become too worldly, confessor to the wealthy and powerful.
 5. The institutional church had forgotten the reality of sin.
- D. Jansenism, condemned by the Pope, became the religious and political underground of France. The Jansenist convent at Port Royal was a center of moral and ecclesiastical revolt. The French crown eventually razed the site.
- E. Pascal became one of the foremost apologists of Jansenism, Catholicism, and Christianity.
- III. The *Pensees*, Pascal's unfinished work of Christian apologetics, was edited and arranged by his Jansenist friends at Port-Royal.
- A. Pascal's *Pensees*—thoughts on religion—electrified a generation and readers around the world ever since.
 - B. What are the themes of the *Pensees*?
 1. The book begins with the misery of man without God. All human effort is an attempt to avoid such questions as “Who am I?” and “What is my fate?”
 2. One sees the simultaneous realism and absurdity of the human condition. What could be more absurd than national divisions—during wartime, “murder” can be a crime on one side of a border and an act of heroism on the other.
 3. Mankind is a mass of contradictions: genius and ignorance, science without morality, energy without purpose, reason governed by arbitrary custom.
 4. We are creatures of intellectual weakness. We are under the influence of passions and prejudices, unable to grasp the infinitely large or the infinitesimally small.
 5. Pascal plays on the contemporary fascination with gambling. He proposes the famous wager: if God exists and you wager such and are right, you lose nothing and earn the possibility of infinite gain. If you bet God doesn't exist, however, you stand to gain nothing

and lose everything. This isn't a proof but an incitement to knowledge.

6. The knowledge of God, however, is insufficient without the knowledge of Christ.
7. Faith and the Christian Revelation change everything: one believes via one's heart, if it has been touched by grace.
8. With faith, our contradictions and unhappiness, our greatness and depravity, all fall into place.
9. Inner peace and salvation are the goals of life.

Essential Reading:

Blaise Pascal, *Pensees, (Thoughts on Religion)* translated by A. J. Krailsheimer (London: 1966).

Supplementary Reading:

Blaise Pascal, *The Provincial Letters*, translated by A. J. Krailsheimer (Baltimore: 1967).

Questions to Consider:

1. Why would many theologians, as they did, find Pascal's fideism, for all its piety, dangerous to religion?
2. Is Pascal appealing to a religious (and moral) experience that is as much “data” about the world as are the objects of Bacon's, Galileo's, or Descartes's inquiries?

Lecture Thirty-Five

Bayle--Skepticism and Calvinism

Alan Kors, Ph.D.

Scope: Despite his obscurity for most twentieth-century readers, the fideist Pierre Bayle was one of the most influential authors of the late seventeenth and early eighteenth centuries. Philosophical skepticism is the belief that that we may know nothing with certainty. When it is used to humble human reason and demonstrate our dependence on religious faith, it is termed “fideism.” In the seventeenth century, fideism was yet another systematic assault on the dominant Aristotelian scholasticism. The fate of Bayle’s reputation in the eighteenth century reveals the paradox of urging fideism, on the one hand, and the incompatibility of reason and faith, on the other, in an age of growing confidence in reason. Seen in the context of his Huguenot (French Calvinist) setting, first in France, then in the Huguenot refuge in Holland, Bayle’s religious itinerary permits us to understand his themes in terms of his own commitments. For example, in his discussions of the ethics of King David and of the problem of evil under an infinitely good God, Bayle revealed that human reason is simultaneously vital and critical, and incapable of understanding the mysteries of the faith, above all, the mysteries of God’s ways with mankind (which is precisely why they are mysteries and precisely why there is a need for faith). The arrogance of reason and the avoidance of a simple, peaceful faith, Bayle believes, lead to superstition, intolerance, and cruelty. The irony of Bayle’s work is that despite his pious intent, he was increasingly read as irreligious, because his fideism confronted a learned world that was ever more naturalistic and committed to reason.

Outline

- I. Although he is not widely known today, Pierre Bayle was one of the most influential authors of the seventeenth century, whose appeal lasted throughout the first half of the eighteenth century, when he was one of the most widely read figures of the age.
 - A. The case of Pierre Bayle is remarkable and illustrative of seventeenth-century tensions and dilemmas because he was appropriated by so many other writers and his reputation evolved so much over time.
 - B. During his own lifetime, he was a leading Calvinist Huguenot thinker and known as a deeply pious man.
 - C. From the mid-eighteenth century, he was known as a free thinker and even a friend of atheism, a reputation that continued until well into the twentieth century.

- D. The revision that began in the mid-twentieth century was based on quantitative historical studies of inventories of books, which showed that his *Historical and Critical Dictionary* was the most widely owned book in private libraries throughout the early to late eighteenth century.
- E. Bayle’s pious but problematic goal was to humble reason and to show our absolute dependence on faith. He sought to demonstrate the incompatibility of reason and faith.

II. Bayle’s career allows us to place his intellectual work in context.

- A. Bayle’s religious career demonstrates his intimate ties to Huguenot Calvinism.
 1. He converted from Protestantism to Catholicism as a young man.
 2. After long meditation, he reconverted from Catholicism.
 3. He fled from France and spent long years as a Calvinist teacher while maintaining a role as a leading Calvinist polemicist.
 4. He played a significant role in the divisions of European Calvinism and its apologetics.
- B. Bayle’s publishing career reveals his central position in seventeenth-century erudition and debate.
 1. He was a controversial figure and became a major proponent of religious toleration.
 2. He set out to humble arrogant theologians who persecuted others according to beliefs they couldn’t defend.

III. Bayle’s intellectual itinerary was wide-ranging.

- A. Erudition and truth, critical reason, and faith were important concepts.
 1. For example, his article “King David” reminded readers that David was a murderer, adulterer, and thief, though still beloved by God.
 2. To put the article in context, Bayle’s Huguenot community had been greatly persecuted and actually fomented a rebellion against Louis XIV—Bayle taught tolerance and pacifism instead.
- B. Bayle addressed religious issues.
 1. The unknowable mystery of salvation was a tenet of Calvinism.
 2. Some Calvinists backed off the tenet enough to say that those who were justified and sanctified would have some signs. But Bayle believed the mystery was foremost.
- C. What are the intellectual issues?
 1. Only faith, whatever the scandal, can be offered to unbelievers.
 2. For faith to exist, there must be an obligation to natural judgment.
 3. For the problem of evil, Bayle said that neither logic nor evidence can overcome someone who doubts the goodness of God.
- D. Only faith resolves the paradoxes of the Christian and the Manichean heresy. Neither reason nor argument can do so.

Lecture Thirty-Six
Newton and Enlightened Science
Alan Kors, Ph.D.

1. For example, the Trinity is incomprehensible by reason; the Greek skeptical paradoxes, for example, based on reason, would admit no motion in the world. Reason was too weak to understand ultimate things. Bayle's skepticism is directed against all intellectual confidence.
2. Bayle's tensions are resolved through humility, tolerance, and quiet belief by faith and conscience.

IV. A summary of Bayle's legacy.

- A. Opposed by outraged theologians, Bayle attempted to criticize the very foundations of his culture's intellectual inheritance, trying to show that Christianity becomes superstitious when it departs from simple faith.
 1. He assaulted fear of comets and belief in witchcraft; he believed that the atheist and the Christian could be equally virtuous.
 2. Always, for Bayle, one was to avoid over-extension of human claims and hold to simple faith.
- B. A tidal change was occurring in the culture, however, that would affect perceptions of Bayle.
 1. Bayle was increasingly read as irreligious, given the growing commitment to rational and evidential belief.
 2. Bayle's "David" gave rise to Voltaire's "David," despite the extraordinary difference in their two religious worlds.
 3. Fideism persisted, but it occurred on a wave of naturalization and rational commitment.
 4. The religious culture rapidly abandoned Bayle's belief that the world is clearer if reason's light is diminished.

Essential Reading:

Pierre Bayle, *Historical and Critical Dictionary*, translated and edited by Richard H. Popkin (Indianapolis: 1985).

Supplementary Reading:

Walter Rex, *Essays on Pierre Bayle and Religious Controversy* (The Hague: 1965).

Questions to Consider:

1. By the eighteenth century, many readers viewed Pascal's fideism as sincere and Bayle's fideism as insincere. Is there something about Bayle's arguments that encouraged that reading?
2. Why should the traditional argument that the wisdom of the Christian is foolishness to the world cause such scandal in the late seventeenth century?

Scope: Isaac Newton (1642–1727) played a magisterial role in the intellectual and scientific revolutions of the seventeenth century, but he was (and saw himself as) a product of prior empirical, experimental, and mathematical philosophy. Shortly after receiving his bachelor's degree at Cambridge, Newton, in one stretch of eighteen months, formulated the law of gravity, laid the foundations of modern physics in his laws of motion, transformed the entire science of optics, and created the calculus. It was not until two decades later, however, that his work on physics and astronomy were communicated to the world. In 1687, Newton published his *Philosophiae Naturalis Principia Mathematica*, the *Mathematical Principles of Natural Philosophy*.

The publication of Newton's *Principia* was not merely a major event in the history of Western science, but a watershed in the history of Western culture. A mathematical demonstration of the Copernican hypothesis as proposed by Kepler, the *Principia* convinced the majority of its readers (and the readers of those who popularized and explained it) that the world was ordered and coherent. Further, the *Principia* showed that the human mind, using Baconian method and mathematical reasoning, could understand that order. The enthusiasm for Newton, based often on the success of his predictions, extended far beyond those who could understand his work.

The Newtonian triumph, however, was not immediate. The work was opposed by the Cartesians, whose physics had itself triumphed over the Aristotelians. To the Cartesians, Newton's model, with an occult action at a distance (gravity), violated the clarity and logic of mechanistic explanation. Cartesian-Newtonian debate went to the heart of what we mean by scientific explanation and raised vital issues of theology as well. Newton at first had sought a mechanistic explanation of gravity, but made a virtue out of necessity by insisting that science should not feign hypotheses, that it should be limited in its ultimate claims, explaining how, not why. Newton (and the Newtonians) also believed that natural philosophy proved God (and his omnipotence) from the order and contingency of the world. The Newtonian synthesis gave to the culture a great confidence in inductive science, the mathematization of motion, and natural theology.

Outline

- I. The education of Isaac Newton was crucial to his formation.
 - A. He entered Trinity College, Cambridge University, in 1661. Unlike the rest of the university, which was dominated by Aristotelians, Trinity College was a Cartesian stronghold.
 - B. Newton was introduced to Descartes and to higher mathematics.
 - C. Shortly after receiving his bachelor's degree, Newton spent eighteen months in the countryside to avoid the plague—an eighteen months unparalleled for its intellectual acuity—during which time he altered the history of the world.
 1. He discovered the law of gravity, though he forgot about the theory for twenty years.
 2. He formulated the three essential laws of mechanics that would govern Western physics.
 3. He created the infinitesimal calculus.
 4. He made possible the foundation of modern optics (the science of light) with his experimental discovery of the composition of light.
 - D. Nearly twenty years later, in 1684, the magnitude of Newton's accomplishments was revealed when he was invited to contribute his views to a gathering of the great scientific minds of the time: Edmund Halley, Sir Christopher Wren, and Robert Hooke.
 1. Newton astonished them with his mathematical proof of the law of gravitation and the existence of elliptical orbits of the heavenly bodies, per Kepler.
 2. At Halley's urging and expense, Newton further developed his general system of the laws of motion and published them in 1687 as the *Philosophiae Naturalis Principia Mathematica*—better known simply as the *Principia*.
- II. The publication of Newton's *Principia* was a watershed in the history of science and culture.
 - A. Newton's *Principia* was a mathematical demonstration of the Copernican hypothesis as proposed by Kepler in his laws of planetary motion. Suddenly, phenomena as divergent as the appearance of comets and the existence of tides were explicable.
 - B. The *Principia* also convinced a culture that the world was ordered and lucid and that the human mind was capable of understanding the architecture and design of God in the creation.
 - C. The enthusiasm for Newton was great, and his predictions played a role in convincing even those who could not understand his work. Edmund Halley said of Newton, "Nearer the gods no mortal may approach." Alexander Pope penned his epitaph: "God said, 'Let Newton be,' and all was light."

- III. Newtonians versus Cartesians is one of the most illuminating disputes in the history of science.
 - A. For Cartesians, Newton's explanation of action at a distance sounded Aristotelian in concept.
 - B. Newton made a virtue out of a necessity, explaining that a certain force operates, not why or how it does so. For Cartesians, such an explanation should include how the world came to be that way in the first place.
 - C. Science, Newton replied, should not feign hypotheses.
 - D. Science should admit ignorance absent data, an idea John Locke would develop later.
 - E. The goals of Newtonian thinking were many.
 1. God's omnipotence and freedom were evident, in contrast to the "necessary" acts of God deduced by Cartesian rationalism.
 2. For Newton, science was a demonstration of God's omnipotence and wisdom.
 3. One could see, through nature, to nature's laws and their author, God.
 4. This meant, of course, that nature was lawful and knowable: all knowledge was a piety.
 5. Newton's greatest legacy was a sense of order and clarity.
- IV. The influence Newton wields is enormous.
 - A. The intellectual community had great confidence in the method of Newton's achievement: observation, induction, mathematization of motion, quantitative instead of qualitative knowledge, predictive value, and experiment.
 - B. God did not intend us for ignorance: we now had a method by which to use our minds.
 - C. For many, this was a model to be extended to the whole of knowledge.

Essential Reading:

Isaac Newton, *Newton's Philosophy of Nature: Selections from His Writings*, edited by H. S. Thayer (New York: 1953).

Supplementary Reading:

Isaac Newton, *The Mathematical Principles of Natural Philosophy*, translated and edited by Florian Cajori, 2 vols. (Berkeley: 1934).

Alexandre Koyre, *Newtonian Studies* (Cambridge, MA: 1965).

Questions to Consider:

1. How is it possible for certain scientific facts to understand to change the way we think about the world?

2. Looking at current thinking about cosmology, astronomy, and physics, is it obvious that the Newtonians won all the arguments that they had with the Cartesians?

Glossary

Anticlericalism: The belief that the religious, social, or political influence of the clergy is harmful and should be restrained.

Apologetics: Defense by argument, most often of the Christian faith.

Cartesian: Pertaining to Descartes or to his followers.

Cogito ergo sum: From Latin, “I think, therefore I am”—Descartes’s bedrock dictum of epistemology.

Corporeal: Relating to matter and to physical properties.

Deduction: Reasoning from the general to the particular or from premises to what follows logically from those premises.

Disputatio: The model of teaching, examination, and argument that dominated medieval and early modern universities in Europe, based on authority and logical deduction from received authorities.

Dualism: The philosophical opinion that reality and, in particular, the human being, is divided into two distinct and irreconcilable substances, body and soul.

Fideism: A religious form of philosophical skepticism that views the uncertainty and weakness of natural human knowledge as an indication of the necessity of faith.

Geocentric: A system of astronomy in which the earth is the center of the cosmos.

Heliocentric: A system of astronomy in which the sun is the center of the cosmos.

Humanism: The celebration of mankind and secular concerns, strongly associated with the Renaissance.

Idealism: The philosophical doctrine that thought has as its object ideas rather than material objects.

Idols of the Mind: For Francis Bacon, the fictions (“Tribe,” “Cave,” “Marketplace,” and “Theater”) created by language and custom.

Induction: Reasoning from the particular to the general or from a number of common facts to a general conclusion.

Jansenism: A movement in early modern European Catholicism that emphasized the texts of Saint Augustine that most stressed predestination and the need for personal and unmerited grace.

Manichean heresy: The belief that the universe is governed by opposing and equal forces of good and evil.

Materialism: The philosophical theory that matter is the only (or only knowable) substance in the universe.

Monism: The belief that the universe is made of one substance.

Neo-Pythagoreans: A group that developed early in the Christian era that combined elements of Jewish and Hellenistic philosophy in resurrecting some of the mystical tenets of Pythagoras.

Objective being: In Cartesian philosophy, that which is represented by an idea.

Philosophia Christi: Literally, “philosophy of Christ.” According to Erasmus, the teachings of Christ that should serve as a model for reforming religious and secular abuses.

Pyrrhonism: Named after the Greek skeptic Pyrrho, an extreme form of philosophical skepticism; best known for its doubt that even the proposition “Nothing can be known with certainty” could be known with certainty.

Rationalism: The philosophical doctrine that all true knowledge is found by reason alone, independent of the senses.

Renaissance: Literally, “a rebirth”; specifically, the rebirth of classical learning and art in Europe during the fourteenth, fifteenth, and sixteenth centuries.

Scholasticism: A system of thought arising from the fusion of Aristotelian philosophy and Christian theology that dominated the schools of Europe from the late fourteenth until the end of the seventeenth century.

State of nature: Term of social contract theory that describes the human condition before the establishment of governmental authority.

Utopia: From Latin, literally “no-place.” Thomas More’s fictional island kingdom of the same name was a critique of the status quo in the sixteenth century and has become synonymous with the notion of an ideal society that is unattainable.

Biographical Notes

Bacon, Francis (1561–1626). Statesman and philosopher, Bacon undertook a fundamental revision of human inquiry and knowledge. The son of a powerful Tudor politician, Francis Bacon studied at Trinity College, Cambridge; became a barrister; and rose to the position of Lord Chancellor of the kingdom, becoming the Baron Verulam and the Viscount of St. Albans. He was dismissed from power in 1621 for bribery, a common charge in the perilous world of Tudor-Stuart politics, and spent the final years of his life working on his great philosophical project, the *Instauratio Magna*, of which one vital part, the *Novum Organum*, became his most influential legacy.

Bayle, Pierre (1647–1706). Erudite scholar, religious controversialist, and ardent Huguenot (French Calvinist), Bayle shook the learned world of the late seventeenth century with his critique of intellectual arrogance, superstition, and religious intolerance. After a brief conversion to Catholicism, Pierre Bayle returned to his Calvinist origins and taught philosophy at the Protestant Academy of Sedan; he later taught philosophy and history to the growing number of persecuted Huguenots who took refuge there. Bayle feuded with the Huguenot leader, Pierre Jurieu, on matters of political theology, and was stripped of his professorship in 1693. He served as editor of a leading journal of the European learned world, wrote major works on tolerance and religious belief, and authored a celebrated *Dictionnaire historique et critique* (1697, the first of many editions).

Descartes, René (1596–1650). Educated first by the Jesuits, then in law in France, Descartes became the most influential Continental philosopher of the seventeenth century. Between 1618 and 1628, he traveled and studied throughout Europe while on military service, writing and publishing foundational works of mathematics and philosophy. In 1628, he moved to Holland, where censorship was far less severe than in his native France. He visited Paris in 1647 and in 1648 met with leading European philosophers of his age. A series of works published between 1637 and 1649—*Discourse on Method*, *Meditations on First Philosophy*, *Principles of Philosophy*, and *Treatise on the Passions*—earned him ardent disciples, and his system of philosophy soon challenged Aristotle’s for dominance among European thinkers. Posthumously published works only added to his fame. He was attacked bitterly for his challenges to the Aristotelian system, but his defenders and acolytes included both eminent theologians and natural philosophers.

Erasmus (1466?–1536). Dutch humanist, author, ordained priest. Desiderius Erasmus was a renowned scholar who counted among his friends Sir Thomas More and Henry VIII. He translated much of the Bible and the writings of the early church fathers into Latin. His best-known books include *Manual of the Christian Knight*, *Adages*, and especially, *The Praise of Folly*. An advocate of

church reform, Erasmus earned the bitter opposition of Martin Luther, whose doctrine of predestination he had vehemently criticized.

Galilei, Galileo (1564–1642). Mathematician, astronomer, inventor, and physicist, Galileo both laid the foundations of the scientific revolution of the seventeenth century and polemicized with astute effectiveness against the prevailing Aristotelian scholastic philosophy. In 1589, he became a lecturer in mathematics at the University of Pisa and in 1592, he was awarded a chair in mathematics at the University of Padua, a position that he held for eighteen years. His development of an effective astronomical telescope in 1609 and his telescopic discoveries, published in 1610, made him a European celebrity. An early defender of the Copernican heliocentric theory, he was charged with heresy and theological error in 1633, forced to recant his Copernicanism, and placed under house arrest on his own estate, where he died in 1642. Although forbidden from writing during his arrest, he completed and smuggled out to the public his foundational work on the new physics.

Hobbes, Thomas (1588–1679). Born only 68 years after Machiavelli wrote *The Prince*, Hobbes followed Machiavelli, especially in his break with Plato's idealism and frank endorsement of realism in politics. Hobbes, like Plato and Machiavelli, faced massive political crisis in his time and, like them both, his remedy was based on a diagnosis of human nature and a prescription of strong leadership. Born in a small town in southwest England at a time when the country was being threatened by invasion from the Spanish Armada, Hobbes said that his mother unknowingly gave birth to twins: himself and fear. Educated at Oxford and influenced by Sir Francis Bacon (1561–1626), Hobbes translated Thucydides in 1628 to recommend its lessons to seventeenth-century England and completed his masterpiece, *The Leviathan*, in 1651. Although Hobbes saw himself as more than a political theorist, this is how he is seen today.

Machiavelli, Niccolo (1469–1527). Born in Florence into an impoverished branch of a distinguished family, Machiavelli became a major figure in Renaissance political philosophy. As a Florentine diplomat, he learned about power politics and met many of the figures about whom he subsequently wrote—among them Cesare Borgia, Pope Julius II, and the Holy Roman Emperor Maximilian I. When the Medici took power in Florence in 1512, Machiavelli was dismissed from his post and withdrew to his home in the countryside. In 1513, he was briefly imprisoned and tortured for his alleged role in a conspiracy against the Medici.

More, Thomas (1478–1535). More was educated at Oxford University and subsequently became a successful London lawyer and a diplomat in the court of Henry VIII. After serving the king in a number of important governmental positions, he was appointed Lord Chancellor in 1529. More resigned this position in 1532 and was soon thereafter imprisoned in the Tower of London for refusing to swear allegiance to Henry VIII as head of the Church of England.

Beheaded in 1535, More died a celebrated martyr in the Roman Catholic Church.

Newton, Isaac (1642–1727). Newton was born at Woolsthorpe, England, and attended Trinity College, Cambridge. In 1664, the university was forced to close temporarily because of the plague, and Newton returned home to Woolsthorpe where, during the following eighteen months, he made his revolutionary discoveries in gravitation, calculus, and the composition of light. At the urging of the astronomer Edmund Halley, Newton published his theories regarding gravity and other subjects in his famous *Principia* in 1687. Newton was Lucasian Professor of Mathematics at Cambridge and president of the Royal Society from 1703 until his death in 1727. Although a pious man, he was also deeply interested in alchemy and numerology, writing many more pages on these pseudoscientific subjects than on his scientific and mathematical insights. Newton was very sensitive to criticism, and he engaged in numerous intellectual quarrels; the most famous of these was his debate with Leibniz over which of them had been the first to invent the calculus.

Pascal, Blaise (1623–1662). Pascal was a child prodigy in mathematics, but as a young man, he abandoned, with periods of activity interspersed, a breathtaking scientific career to devote himself primarily to the religious life, including religious controversies and apologetics. In mathematics and science, he won international acclaim for his work on cycloid curves, barometrics, geometry, hydrodynamics, and the mechanics of calculation. After an intense conversion to Jansenism, he lived a generally ascetic and devout life, writing an immensely successful Augustinian criticism of Jesuit casuistry, *Les Provinciales* (*The Provincial Letters*), and an unfinished apologia of Christianity, published posthumously as his *Pensees*, a work of immediate and enduring influence and popularity.

Spinoza, Baruch (1632–1677). Born in Amsterdam of Jewish parents who had fled the Portuguese Inquisition, Spinoza was one of the preeminent philosophers of the seventeenth century. He was educated at the Rabbinical School, where he studied Hebrew, the Old Testament, the Talmud, and the works of Maimonides, René Descartes, and Thomas Hobbes. In 1656, Spinoza was excommunicated from the orthodox Jewish community in Amsterdam for expressing doubts about orthodox Judaism. Largely cut off from the Jewish community in Holland, he spent the rest of his life in several Dutch towns, grinding lenses and developing his philosophy. At age forty, he was offered but declined a chair in philosophy at the University of Heidelberg, preferring his quiet life in Holland. Spinoza died of tuberculosis, his illness likely worsened by the dust from grinding lenses.