Rene Descartes: An Introduction

Life

- INTRODUCTION
  Descartes, René (1596-1650), French philosopher, scientist, and mathematician, sometimes called the father of modern philosophy.

Life

- Born in La Haye, Touraine (a region and former province of France), Descartes was the son of a minor nobleman and belonged to a family that had produced a number of learned men. At the age of eight he was enrolled in the Jesuit school of La Flèche in Anjou, where he remained for eight years.

Life

- Besides the usual classical studies, Descartes received instruction in mathematics and in Scholastic philosophy, which attempted to use human reason to understand Christian doctrine. Roman Catholicism exerted a strong influence on Descartes throughout his life. Upon graduation from school, he studied law at the University of Poitiers, graduating in 1616.

Life

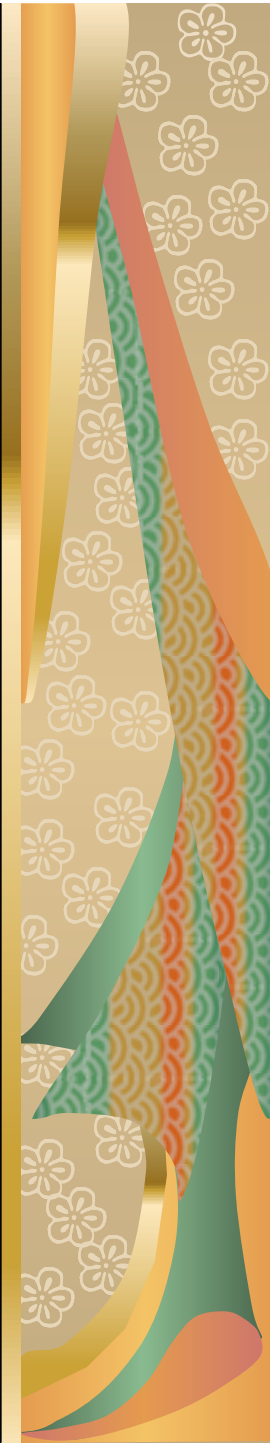
- He never practiced law, however; in 1618 he entered the service of Prince Maurice of Nassau, leader of the United Provinces of the Netherlands, with the intention of following a military career. In succeeding years Descartes served in other armies, but his attention had already been attracted to the problems of mathematics and philosophy to which he was to devote the rest of his life.

Life

- He made a pilgrimage to Italy from 1623 to 1624 and spent the years from 1624 to 1628 in France. While in France, Descartes devoted himself to the study of philosophy and also experimented in the science of optics.

Life

- In 1628, having sold his properties in France, he moved to the Netherlands, where he spent most of the rest of his life. Descartes lived for varying periods in a number of different cities in the Netherlands, including Amsterdam, Deventer, Utrecht, and Leiden



Philosophy

- It was probably during the first years of his residence in the Netherlands that Descartes wrote his first major work, *Essais philosophiques* (Philosophical Essays), published in 1637. The work contained four parts: an essay on geometry, another on optics, a third on meteors, and *Discours de la méthode* (Discourse on Method), which described his philosophical speculations.

Philosophy

- This was followed by other philosophical works, among them *Meditationes de Prima Philosophia* (Meditations on First Philosophy, 1641; revised 1642) and *Principia Philosophiae* (The Principles of Philosophy, 1644). The latter volume was dedicated to Princess Elizabeth Stuart of Bohemia, who lived in the Netherlands and with whom Descartes had formed a deep friendship.

Philosophy

- In 1649 Descartes was invited to the court of Queen Christina of Sweden in Stockholm to give the queen instruction in philosophy. The rigors of the northern winter brought on the pneumonia that caused his death in 1650.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Philosophy

- Descartes attempted to apply the rational inductive methods of science, and particularly of mathematics, to philosophy. Before his time, philosophy had been dominated by the method of Scholasticism, which was entirely based on comparing and contrasting the views of recognized authorities. Rejecting this method, Descartes stated, "In our search for the direct road to truth, we should busy ourselves with no object about which we cannot attain a certitude equal to that of the demonstration of arithmetic and geometry." He therefore determined to hold nothing true until he had established grounds for believing it true.

Stop here for PI class

Philosophy

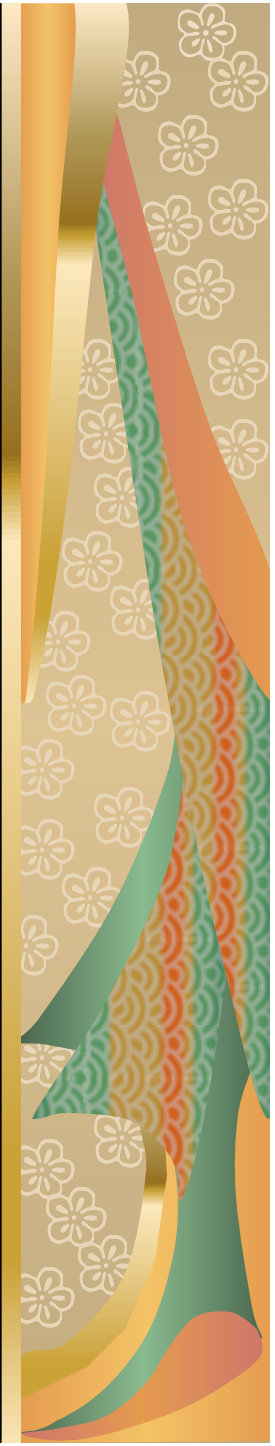
- The single sure fact from which his investigations began was expressed by him in the famous words *Cogito, ergo sum*, "I think, therefore I am." From this postulate that a clear consciousness of his thinking proved his own existence, he argued the existence of God.

Philosophy

- God, according to Descartes's philosophy, created two classes of substance that make up the whole of reality. One class was thinking substances, or minds, and the other was extended substances, or bodies.

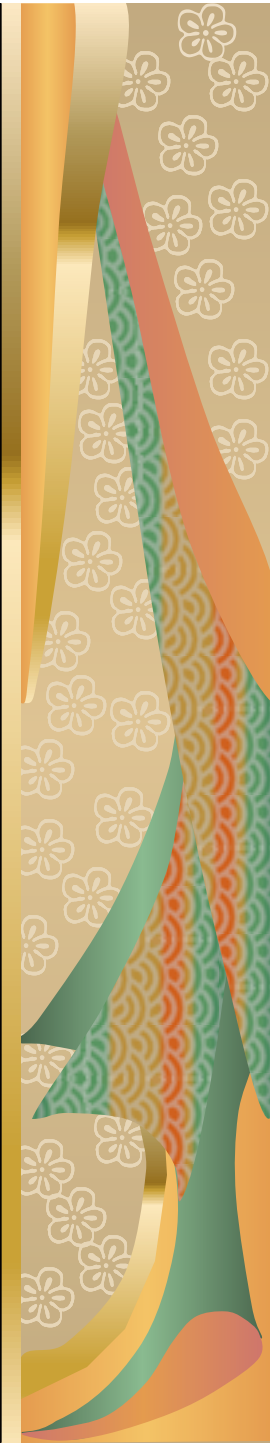
Science

- Descartes's philosophy, sometimes called Cartesianism, carried him into elaborate and erroneous explanations of a number of physical phenomena some, however, had value, because he substituted a system of mechanical interpretations of physical phenomena for the vague spiritual concepts of most earlier writers.



Science

- Although Descartes had at first been inclined to accept the Copernican theory of the universe with its concept of a system of spinning planets revolving around the sun, he abandoned this theory when it was pronounced heretical by the Roman Catholic church. In its place he devised a theory of vortices in which space was entirely filled with matter, in various states, whirling about the sun.

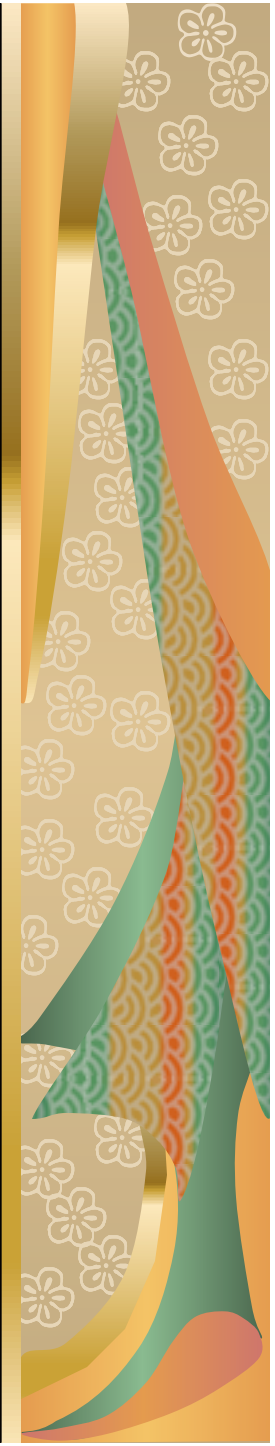


Science

- In the field of physiology, Descartes held that part of the blood was a subtle fluid, which he called animal spirits. The animal spirits, he believed, came into contact with thinking substances in the brain and flowed out along the channels of the nerves to animate the muscles and other parts of the body.

Science

- Descartes's study of optics led him to the independent discovery of the fundamental law of reflection: that the angle of incidence is equal to the angle of reflection. His essay on optics was the first published statement of this law. Descartes's treatment of light as a type of pressure in a solid medium paved the way for the undulatory theory of light



Mathematics

- The most notable contribution that Descartes made to mathematics was the systematization of analytic geometry (*see* Geometry: *Analytic Geometry*). He was the first mathematician to attempt to classify curves according to the types of equations that produce them. He also made contributions to the theory of equations. Descartes was the first to use the last letters of the alphabet to designate unknown quantities and the first letters to designate known ones

Mathematics

- He also invented the method of indices (as in *x*2) to express the powers of numbers. In addition, he formulated the rule, which is known as Descartes's rule of signs, for finding the number of positive and negative roots for any algebraic equation.