Cogito Ergo Sum – The Philosophy of René Descartes

René Descartes (1596-1650)

On March 31, 1596, French philosopher, mathematician, and writer **René Descartes** was born. The Cartesian coordinate system is named after him, allowing reference to a point in space as a set of numbers, and allowing algebraic equations to be expressed as geometric shapes in a two-dimensional coordinate system. He is credited as the father of analytical geometry, the bridge between algebra and geometry, crucial to the discovery of infinitesimal calculus and analysis. Descartes was also one of the key figures in the Scientific Revolution and has been described as an example of genius. He has been dubbed the 'Father of Modern Philosophy'. His Meditations on First Philosophy continues to be a standard text at most university philosophy departments.

"Of all things, good sense is the most fairly distributed: everyone thinks he is so well supplied with it that even those who are the hardest to satisfy in every other respect never desire more of it than they already have.",
– Rene Descartes, Discours de la Methode (1637)

Youth and Education

René Descartes was born in the Touraine, France and attended the Jesuit College of La Fleche in 1606. At the school he learned Latin, Greek and studied the philosophies of Aristotele, Plato, the Stoics, and Cicero. Descartes also studied curiously mathematics, physics, and especially the works of Galileo Galilei.[4] Just like many of Descartes' ancestors, he was supposed to become a lawyer, but never actually practiced law or anything like it after graduating in 1616. Instead, Descartes became a soldier as support to Protestant Prince Maurice for some years.

A New Philosophy

One of his first influences depicted Isaac Beeckman, a mathematician and natural philosopher, who met with Descartes while stationed at Breda. According to French scholar Adrien Baillet, on the night of 10–11 November 1619 (St. Martin's Day), while stationed in Neuburg an der Donau, Descartes shut himself in a room with an "oven" to escape the cold. While within, he had three dreams and believed that a divine spirit revealed to him a new philosophy. Upon exiting, he had formulated analytical geometry and the idea of applying the mathematical method to philosophy. He concluded from these visions that the pursuit of science would prove to be, for him, the pursuit of true wisdom and a central part of his life's work. Descartes also saw very clearly that all truths were linked with one another so that finding a fundamental truth and proceeding with logic would open the way to all science. Descartes discovered this basic truth quite soon: his famous "*I think, therefore I am*".

The Cartesian System

In these years, Descartes discovered the technique of describing lines through mathematical equations, which led to the combination of both, algebra and geometry. Algebra and analysis evolved step by step after Descartes' findings and the coordinate system of algebraic geometry came to be called "Cartesian coordinates" in honor to the scientist. Later on, Descartes enrolled at Leiden University, studying mathematics and astronomy and then became teacher at Utrecht University.

"Nothing comes out of nothing."
– Rene Descartes, Principia philosophiae, Part I, Article 49

Principles of Philosophy

In the 1620's, René Descartes worked on a metaphysical piece on the existence of God, nature, and soul as well as tried to explain the set of parhelia in Rome. He combined both in the work *Treatise on the World*, which consisted of three parts. Only two of these, *The Treatise of Light* and the *Treastise of Man* survived. The two parts gave a good illustration of the universe as a system including all of its structures, operations, planet formations, light transmission, and the role of the human on Earth. However, Descartes abandoned his plans to publish the Treatise on the World after Galileo was condemned. He continued publishing works on philosophy, geometry, meterology and his most famous *Discours de la Méthode*, demonstrating four rules of thought. Further influential works followed after 1641, when Descartes published his *Mediations on First Philosophy* and his *Principles of Philosophy*.

Discours de la Methode

The key points of *Discours de la Méthode* are:

- a theory of cognition that only accepts as correct what is verified as plausible by its own step-by-step analysis and logical reflection,
- an ethics according to which the individual must behave conscientiously and morally in the sense of proven social conventions,
- a metaphysics which (by logical proof) accepts the existence of a perfect Creator-God, but leaves little room for church-like institutions,
- a physics which regards nature as regulated by God-given but generally valid laws and makes its rational explanation and thus ultimately its control the task of man.

The philosophical method formulated in detail in the *Discours de la méthode* of Descartes is summarized in four rules (II. 7-10):

- Scepticism: Do not believe anything that is not so clearly recognized that it cannot be called into doubt.
- Analysis: Solving difficult problems in substeps.
- Construction: progressing from simple to difficult (inductive procedure: from concrete to abstract)
- Recursion: Always check whether the examination is complete.

Cogito ergo sum

During his lifetime, Descartes is now regarded as one of the first to write about the importance of reason in natural sciences rejecting any doubtable ideas. This was illustrated in his famous phrase 'cogito ergo sum' (*I think, therefore i am*) through which he concluded that doubting the existence of a person was already the prove of one's presence. Descartes was also known for his dualism. He once wrote that a human body functioned like a machine with material properties and the mind, both interacting at the pineal gland. In other words, this means that the body is controlled by the mind and vise versa.

"In order to seek truth, it is necessary once in the course of our life, to doubt, as far as possible, of all things."
– Descartes, René, Principles of Philosophy (1644)

Laying the Foundations for Leibniz and Newton

Through his works, René Descartes was able to set the foundations of the society's emancipation from the Church, and shifting it from the medieval to the modern period. In mathematics, Descartes was able to lay the foundations for Leibniz and Newton to develop calculus and he discovered the law of reflection, achieving a critical contribution to the field of optics. One of Descartes' most enduring legacies was his development of Cartesian or analytic geometry, which uses algebra to describe geometry. He "*invented the convention of representing unknowns in equations by x, y, and z, and knowns by a, b, and c*". He also "*pioneered the standard notation*" that uses superscripts to show the powers or exponents. He was first to assign a fundamental place for algebra in our system of knowledge, using it as a method to automate or mechanize reasoning, particularly about abstract, unknown quantities.

René Descartes passed away on February 11, 1650 in Stockholm. In 1663, Pope Alexander VII set his works on the 'Index of Prohibited Books'.

References and Further Reading:

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