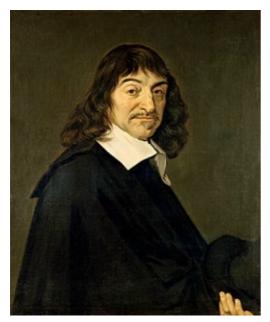


Sec 3 Mathematics

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Cartesian Coordinates Reading 1

A little history on Rene Descartes – without whom – we may not be doing Coordinate Geometry!



Descartes was born in La Haye en Touraine, Indre-et-Loire, France (renamed "La Haye-Descartes" in 1802 and simply "Descartes" in 1967). At the age of eight, he entered the Jesuit College Royal Henry-Le-Grand at La FlÃ"che. After graduation, he studied at the University of Poitiers, graduating with a *Baccalauréat* and *Licence* in law in 1616.

Significance

Often regarded as the first "modern" thinker for providing a philosophical framework for the natural sciences as these began to develop, Descartes in his *Meditations on First Philosophy* attempts to arrive at a fundamental set of principles that one can know as true without any doubt. To achieve this, he employs a method called Methodological Skepticism: he doubts any idea that can be doubted.

He gives the example of dreaming: in a dream, one's senses perceive things that seem real, but do not actually exist. (This idea is similar to what Chuang Tzu writes after dreaming that he is a butterfly.) Thus, one cannot rely on the data of the senses as necessarily true. Or, perhaps an "evil genius" exists: a supremely powerful and cunning being who sets out to try to deceive Descartes from knowing the true nature of reality. Given these possibilities, what can one know for certain?

Initially, Descartes arrives at only a single principle: if I am being deceived, then surely "I" must exist. Most famously, this is known as *cogito ergo sum*, ("I think, therefore I am"). (These words do not appear in the *Meditations*, although he had written them in his earlier work *Discourse on Method*).

Therefore, Descartes concludes that he can be certain that he exists. But in what form? You perceive your body through the use of the senses; however, these have previously proved unreliable. So Descartes concludes that at this point, he can only say that he is a *thinking thing*. Thinking is his essence as it is the only thing about him that cannot be doubted.

To further demonstrate the limitations of the senses, Descartes proceeds with what is known as the *Wax Argument*. He considers a piece of wax: his senses inform him that it has certain characteristics, such as shape, texture, size, color, smell, and so forth. However, when he brings the wax towards a flame, these characteristics change completely. However, it seems that it is still the same thing: it is still a piece of wax, even though the data of the senses inform him that all of its characteristics are different. Therefore, in order to properly grasp the nature of the wax, he cannot use the senses: he must use his mind. Descartes concludes:

"Thus what I thought I had seen with my eyes, I actually grasped solely with the faculty of judgment, which is in my mind."

In this manner, Descartes proceeds to construct a system of knowledge, discarding perception as unreliable and instead admitting only deduction as a method. Halfway through the *Meditations*, he



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