

CARTESIAN Philosophy (I)



Descartes
(1596-1650)

Probably the 2 most important influences on Descartes's life were his education at the Jesuit college of LaFleche, and his decision to move to Holland in 1628 (where he lived from 1628-49, and wrote all his great works). He died in Sweden shortly after going there to tutor Queen Christina, apparently because of the climate.

In philosophy he is best known for his work on the theory of knowledge (published in 1637 and 1641) which tried to derive an understanding of the world starting from an indubitable premise (the famous "cogito ergo sum"); for this he is considered the father of modern philosophy. In mathematics he made the crucial link between algebra and geometry, by inventing coordinate geometry- this, along with the integral & differential calculus, set off the development of modern mathematics.



Jesuit college at La Fleche



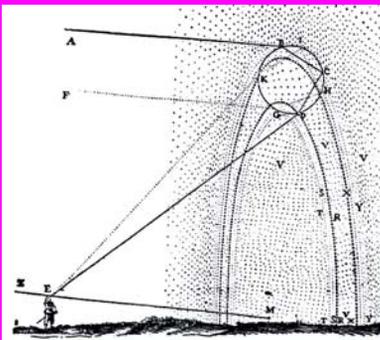
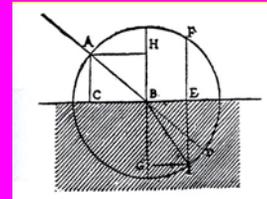
'Christina & her Court' (Dusmeil le J)

Descartes' Scientific Work (I)

Descartes also did much scientific work, both in optics and human anatomy. The impact of this work was greatly blunted because he refrained from publishing most of it (it was published after his death). The work was written in the period 1629-33, but he stopped the work almost as it was finished when he heard of the trial and condemnation of Galileo.

The optical work is interesting because he gave correct explanations of many optical phenomena (including the rainbow- see figure below left). He understood the laws governing refraction already in 1627 (although they had previously been discovered by Snell in 1620), and his mathematical talents enabled him to deduce many of their complex consequences,

starting from the basic formulation shown above.



Descartes also tried to give a general theory of dynamics, both for objects on earth and in the heavens- this is discussed in more detail in the course notes. Although his ideas were very persuasive at the time, the methodology is now viewed as fundamentally flawed. This is because despite the apparent generality of the principles he promoted, there was never any attempt to give a quantitative application of them to, eg., planetary motions- from this point of view he was no better than the Greeks. In the end his views were quite incorrect.

Descartes' Scientific Work (II)

Descartes' interest in human anatomy proceeded partly from his interest in perception, and partly from his desire to understand the relation between mind and matter- a dichotomy which Descartes formulated, and which has been uncritically accepted by much of the world since. His understanding of optics allowed him to unravel the some of mechanisms involved in visual perception, as we see in the drawings taken here from his "Treatise on Man". Notice also his interest in the brain as the organ connected with Perception, memory, etc (but not the 'soul'). His main object in this work was to show how one could give a mechanistic understanding of physiological processes- although most of these processes, from respiration and digestion to reproduction, were already known in some detail, they had been explained in terms of 'souls', instead of mechanically. This was an important step forward.

