

Modern Philosophy Autumn 2001

Descartes 1 Patterson

Descartes's Philosophy and Mechanical Physics

Copernicus proposed that the Earth moves in 1543; Newton's *Principia* appeared in 1687. Descartes, living almost midway between these events (1596-1650), contributed to the new mechanical and mathematical science with work in almost every branch, particularly optics, analytical geometry, and physics. Descartes was educated at a Jesuit college, La Flèche, where much of the curriculum would have been based on the Scholastic synthesis of Aristotelianism and Christianity, particularly that of the 13th-century philosopher and theologian Thomas Aquinas. In 1618 his meeting with a Dutch mathematician and scientist, Isaac Beeckman, revived his interest in mathematics and physics. Descartes began to try to explain natural phenomena in terms of the motions of particles of matter distinguished only by their size, shape, and direction and speed of motion (there is no mass in Cartesian physics, only differences in size and speed of bodies).

In the year after he met Beeckman, 1619, Descartes had a series of dreams which he took as a sign that his vocation was to found a new philosophical system. In the Preface to the French edition of his *Principles of Philosophy*, a work which Descartes hoped would supplant Scholastic textbooks, he compares knowledge to a tree: the roots are metaphysics, the trunk is physics, and the branches are the other sciences (CSM I 186, AT IXB 14). Metaphysics, then, provides the foundation for physics; and providing this foundation is what might be called the "hidden agenda" of the *Meditations*. Descartes says in a letter to Mersenne, Jan 1641:

'...I may tell you, between ourselves, that these six *Meditations* contain all the foundations of my physics. But please do not tell people, for that might make it harder for supporters of Aristotle to approve them. I hope that readers will gradually get used to my principles, and recognize their truth, before they notice that they destroy the principles of Aristotle.' (CSMK 172, AT III 297-8)

Why should Descartes be so circumspect? The dominant Scholastic philosophy fused Aristotelian philosophy with Christian theology in a comprehensive philosophical system which included epistemology, metaphysics, and physics or natural philosophy. This created a danger that attacks on any part of this system could be seen as attacks on religion; Descartes complained in a letter to Mersenne that 'theology...has been so deeply in the thrall of Aristotle that it is almost impossible to expound another philosophy without its seeming to be directly contrary to the Faith' (18 Dec 1629; CSMK 14). When Galileo was condemned in 1633 for maintaining that the Earth moves, Descartes withdrew his treatise *The World* from publication. This work was intended to 'explain all the phenomena of nature—i.e. all of physics' (letter to Mersenne, 13 Nov 1629; CSMK 7) in a mechanistic fashion; Descartes said that the movement of the Earth 'was so closely interwoven in every part of my treatise that I could not remove it without making the whole work defective' (letter to Mersenne, Nov 1633, CSMK 41). It is not surprising, then, that Descartes was circumspect in advancing the philosophical foundations of his physics, or that he added a subtitle to the first edition of the *Meditations* saying that it demonstrated 'the existence of God and the immortality of the soul' (with the second edition, he claimed only to demonstrate the existence of God and the distinction between human soul and body). Descartes wanted not only to set out a new philosophical system in which his mechanical physics was supplied with metaphysical and epistemological foundations, but to show that this system was compatible with the tenets of the Faith. It

is not surprising, then, that the subtitle of the first edition of the *Meditations* claimed that it demonstrates the existence of God and the immortality of the soul.

Scholasticism and Cartesianism

The ambitions of Scholasticism and Cartesianism are similar—to provide a comprehensive philosophical system incorporating natural philosophy or science, epistemology, and metaphysics. But the world according to Descartes is very different from the world according to Scholastics, and so is the way we know about it.

• Science:

Scholastics: teleological explanation in terms of final causes or goals, conferred by nature, e.g. earth moves downwards because its nature is terrestrial, fire upwards because its nature is celestial.

Descartes: mechanistic explanation, extended matter moving according to mathematical laws.

'I freely acknowledge that I recognize no matter in corporeal things apart from that which the geometers call quantity, and take as the object of their demonstrations, i.e. that to which every kind of division, shape and motion is applicable. Moreover, my consideration of such matter involves absolutely nothing apart from these divisions, shapes and motions; and even with regard to these, I will admit as true only what has been deduced from indubitable common notions so evidently that it is fit to be considered as a mathematical demonstration. And since all natural phenomena can be explained in this way, as will become clear in what follows, I do not think that any other principles are either admissible or desirable in physics.' (Principles II 64; CSM I 247)

Mechanistic explanations are clear and certain, while Aristotelian substantial forms are obscure.

'...substantial forms...were introduced by philosophers solely to account for the proper actions of natural things...But no action at all can be explained by these substantial forms, since their defenders admit that they are occult and that they do not understand them themselves. If they say that some action proceeds from a substantial form, it is as if they said that it proceeds from something they do not understand; which explains nothing. So these forms are not to be introduced to explain the causes of natural actions...[I], on the other hand, give manifest and mathematical reasons for natural actions...' (Letter to Regius Jan 1642; CSMK 208-9)

• Metaphysics:

Scholastics: hylomorphism—every individual substance is composed of matter and substantial form, which makes it the kind of thing it is. Form or nature confers characteristic goals and activities. A human being is an individual substance consisting of matter informed by a soul, which confers on matter the activities of growth, movement, sensation, and rational understanding.

Descartes: dualism—mind/soul and body/matter are distinct substances capable of separate existence.

Mind is thinking and non-extended, matter is extended and non-thinking. Purpose belongs to soul alone; substantial forms confuse way bodies act on one another with way soul acts on body (letter 21 May 1643, CSMK 219).

'The earliest judgements which we made in our childhood, and later on the influence of the traditional philosophy, have accustomed us to attribute to the body many things which belong only to the soul, and to attribute to the soul many things which belong only to the body. So people commonly mingle the two

ideas of body and soul when they construct the ideas of real qualities and substantial forms, which I think should be altogether rejected. If you examine physics carefully, you can reduce all those things in it which fall under the province of intellectual knowledge into very few kinds, of which we have very clear and distinct notions...in the case of body and soul you cannot see any...connection, provided you conceive them as they should be conceived, the one as that which fills space, the other as that which thinks.' (letter to de Launay July 1641; CSMK 188)

• **Epistemology:**

Scholastics: empiricism—senses are crucial to acquisition of knowledge. 'Nothing is in the intellect which was not previously in the senses.' The senses receive the forms of several individuals (composed of form and matter), and the intellect abstracts what is common to them and makes them what they are, the substantial form. Non-sensible things, such as God, can be known only through their relation to things which can be sensed, e.g. God is the cause of the sensible world.

Descartes: innatism/rationalism—we have innate ideas of God, mind (thinking substance), and body (extended substance) implanted in our minds by God.

'...many are convinced that there is some difficulty in knowing God, and even in knowing what their soul is. The reason for this that they never raise their minds above things which can be perceived by the senses: they are so used to thinking of things only by imagining them (a way of thinking specially suited to material things) that whatever is unimaginable seems to them unintelligible. This is sufficiently obvious from the fact that even the scholastic philosophers take it as a maxim that there is nothing in the intellect which has not previously been in the senses; and yet it is certain that the ideas of God and of the soul have never been in the senses' (Discourse IV; CSM I 129).

Rather than treating the senses as guides to the nature of bodies, we should employ our innate idea of geometrical extension, which can be made clear and distinct. The senses play a subsidiary role in the acquisition of knowledge; their deliverances must always be subjected to the scrutiny of the intellect.

Refs. Daniel Garber's 'Semel in vita: The Scientific Background to Descartes' Meditations', in *Essays on Descartes' Meditations* (ed. Rorty) and John Carriero's 'The First Meditation' *Pac. Phil. Q.* 1987 (reprinted in Chappell (ed.), *Descartes*), are very helpful.