René Descartes (1596-1650) is one of the most important Western philosophers of the past few centuries. During his lifetime, Descartes was just as famous as an original physicist, physiologist and mathematician. But it is as a highly original philosopher that he is most frequently read today. He attempted to restart philosophy in a fresh direction. For example, his philosophy refused to accept the Aristotelian and Scholastic traditions that had dominated philosophical thought throughout the Medieval period; it attempted to fully integrate philosophy with the "new" sciences; and Descartes changed the relationship between philosophy and theology. Such new directions for philosophy made Descartes into a revolutionary figure.

The two most widely known of Descartes' philosophical ideas are those of a method of hyperbolic doubt, and the argument that, though he may doubt, he cannot doubt that he exists. The first of these comprises a key aspect of Descartes' philosophical method. As noted above, he refused to accept the authority of previous philosophers - but he also refused to accept the obviousness of his own senses. In the search for a foundation for philosophy, whatever could be doubted must be rejected. He resolves to trust only that which is clearly and distinctly seen to be beyond any doubt. In this manner, Descartes peels away the layers of beliefs and opinions that clouded his view of the truth. But, very little remains, only the simple fact of doubting itself, and the inescapable inference that something exists doubting, namely Descartes himself.

His next task is to reconstruct our knowledge piece by piece, such that at no stage is the possibility of doubt allowed to creep back in. In this manner, Descartes proves that he himself must have the basic characterisite of thinking, and that this thinking thing (mind) is quite distinct from his body; the existence of a God; the existence and nature of the external world; and so on. What is important in this for Descartes is, first, that he is showing that knowledge is genuinely possible (and thus that sceptics must be mistaken), and, second, that, more particularly, a mathematically-based scientific knowledge of the material world is possible.
Descartes' work was influential, although his studies in physics and the other natural sciences much less so than his mathematical and philosophical work. Throughout the 17th and 18th Centuries, Descartes' philosophical ghost was always present: Locke, Hume, Leibniz and even Kant felt compelled to philosophical engage (often negatively, of course) with this philosophical giant. For these reasons, Descartes is often called the 'father' of modern philosophy.

This article provides an overview of Descartes' philosophical thought following the order of his most famous and widely-studied book, the *Meditations on First Philosophy*.
The scientific and technical studies of these years resulted in the three texts on optics, meteorology and geometry, which were only published in 1637, and 'The World' which was published posthumously. Nevertheless, Descartes was establishing quite a reputation as a formidable mathematician. Descartes made a number of important contributions to mathematics and physics, among the most enduring of which was his foundation (with Galileo) of what is now known as analytic geometry. That is, broadly speaking, the use of geometrical analysis to solve complex algebraic problems, and *vice versa*. It is difficult to overestimate the importance for the history of mathematical physics of this bringing together of the sciences of geometry and algebra.

With the exception of parts of the *Rules* and a few fragments, most of Descartes' early 'metaphysical' writings are lost. It was after he moved to Amsterdam that Descartes began working in earnest on the philosophical ideas upon which his fame now rests. The *Discourse on the Method* was published in 1637, together with the three treatises mentioned above. And in 1640, he enlarged upon the metaphysical issues therein, writing his *Meditations on First Philosophy*. The full title of this work is *Meditations on the First Philosophy: In Which the Existence of God and the Distinction Between Mind and Body are Demonstrated*. The work was first published in 1641 in Latin and was translated into French in the following year by the Duc de Luynes. The translation into French was relatively unusual and significant, for it testified to Descartes' wishes to bring his work to a wider, non-specialised audience, who lay outside the accepted 'authorities' on theological and philosophical matters. Descartes was so pleased with the French translation that he made some additions and fully endorsed it for later publication. Descartes passed a manuscript of his *Meditations* onto his friend, Father Mersenne, who solicited comments from fellow scholars, including Thomas Hobbes. The comments were returned to Descartes. These, along with his lengthy replies - several times longer than the *Meditations* themselves - were included in the second published edition of the *Meditations* (1642). The *Principles of Philosophy* followed in 1644.

In 1649, Descartes moved to Stockholm at the request of Queen Christina of Sweden who employed him as a philosophy tutor. Christina scheduled the lectures at 5 A.M. The early hours and harsh climate took their toll on Descartes's already weakened condition. He died shortly after in 1650. During his life, Descartes's fame rose to such an extent that (despite the theological controversies centering on him) many Catholics believed he would be a candidate for sainthood. As his body was transported from Sweden back to France, anxious relic collectors along the path removed pieces of his body. By the time his body reached France, it was considerably reduced in size.

Descartes' philosophy developed in the context of the key features of Renaissance and early modern philosophy. Like the humanists, he rejected religious authority in the quest for scientific and philosophical knowledge. Although Descartes was a devout Catholic, he was also influenced by the Reformation's challenge to Church authority, particularly the challenge against medieval Aristotelianism. Nevertheless, Descartes' philosophical vocabulary is heavily determined by scholastic thought - Descartes was happy to borrow ideas or principles where he felt they were not against clear reasoning. For Descartes, reason was both the foundation and guide for pursuing truth. He was an active participant in the scientific revolution in both scientific method and in particular discoveries. Finally, and perhaps most importantly, Descartes reacted strongly against the Renaissance resurgence of ancient Greek scepticism. Thus, we find in Descartes' writings a relentless pursuit of absolute certainty.

Descartes was hugely influential on individual, and key, philosophers throughout the 17th and 18th Centuries (Spinoza, Malbranche, Locke, Leibniz, etc.). His insistence on a radical philosophy that dispensed, as far as possible, with authority; his insistence on the perspective of consciousness in epistemology; his attempt to raise the standard of philosophical argumentation to a science akin to geometry; his close integration of philosophy and physical science; his emphasis on methodology, all were hugely important. Even philosophers who rejected his thought spent a great deal of time and energy doing so - Descartes could not be ignored. Though Descartes' mathematical works were unquestionably
important, the particulars of his physics were less so. And yet Descartes' *general* physics - the rational justification for a universal, mathematical/quantitative understanding of nature - was hugely significant. However, despite all these influences, his philosophical and scientific work never became the 'official' new philosophy, as he had hoped it would. First, it suffered condemnation, usually on religious grounds; this began already during Descartes' lifetime, and his work was officially 'prohibited' in 1663 by the Church in Rome. Then, by the early 18th Century, it suffered the double blow of the rise of empirically-minded approaches in Britain and France, together with the triumph of Newtonian physics pretty much everywhere.

The following article will provide an overview of the majority of Descartes' philosophical ideas. For convenience, we will follow the order and structure of his most famous and widely-read book, the *Meditations on First Philosophy*. The fame and influence of this small book makes it unavoidable as a guide to Descartes' thought. However, along the way and where appropriate, a number of philosophical issues or alternative approaches from other key texts will be introduced.

2. The *Discourse on Method* and Meditation 1

a. Context of Descartes' Method; Clarity and Distinctness

Descartes' philosophical method was also intended to be a method for science. His concern with scepticism in all its forms was therefore directed not only at religious scepticism, but at epistemological scepticism in general, according to which any attempts to know the natural world must be doomed. We might characterise Descartes' general position in the following way: the world created by God was intended by Him to be known, provided only that human beings go about the activity of knowing properly. How the activity of knowing might be properly conducted is the issue of methodology.

Descartes' first discussion of scientific method is in an unfinished work of 1628 titled *Rules for the Direction of the Mind*. The first 12 of the planned 36 rules deal with the general aspects of his proposed methodology, and are considered early versions of principles that made their way into his later writings. In 1633 Descartes prepared for publication a work on physics called *Le Monde* which defended a heliocentric view of the universe. That same year the Catholic Church condemned Galileo's *Dialogue* (1632). Descartes did not think Galileo's views were prejudicial to religion and he worried that his own views might be censured. Thus he suspended publication of it. In 1637 Descartes published a collection of essays titled *Optics, Meteorology, and Geometry*. Prefaced to these essays was a work titled 'Discourse on the Method of Rightly Conducting the Reason and Seeking Truth in the Sciences.' Most of the 'Discourse' was written before the 1633 condemnation of Galileo's *Dialogue*. However, he later added a concluding section that explained that he insisted on publishing, in spite of political risks. The simple reason was that he counted on the public to help confirm his scientific theories. In the Discourse, Descartes offers a method of inquiry quite different from Francis Bacon's as set out in the *Novum Organum* of 1620. Whereas Bacon advocated induction, Descartes insists on a more deductive approach, focusing on the right use of reason with respect to its own ideas.

Most of the *Discourse* is autobiographical insofar as it traces Descartes intellectual development and how his method assisted him in his investigations. It is important to realise, however, that the first person
'narration' frequently found in his philosophy is closely linked to Descartes' philosophical project: how can the individual consciousness come to know itself, its God, its world. Descartes realized that he needed to reject much of the teachings of his youth. This raised the question as to exactly how he should proceed in replacing old theories with new ones. He found his answer by analogy with how old parts of cities are replaced with the new. The more elegant cities are those which are methodically built from scratch, not those which continually renovate old sections.

Descartes explains that he had learned a variety of methodological approaches in a variety of disciplines. They all had limits, though. Syllogistic logic, he believes, only communicates what we already know. Geometry and algebra are either too abstract in nature for practical application, or too restricted to the shapes of bodies. However, he believed that a more condensed and universal list of methodological rules was better than a lengthy and varied list.

The first was never to accept anything as true if I did not have evident knowledge of its truth; that is, carefully to avoid precipitate conclusions and preconceptions, and to include nothing more in my judgements than what presented itself to my mind so clearly and distinctly that I had no occasion to doubt it.

The second, to divide each of the difficulties I examined into as many parts as possible and as may be required in order to resolve them better.

The third, to direct my thoughts in an orderly manner, by beginning with the simplest and most easily known objects in order to ascend little by little, step by step, to knowledge of the most complex, and by supposing some order even among objects that have no natural order of precedence.

And the last, throughout to make enumerations so complete, and reviews so comprehensive, that I could be sure of leaving nothing out. (I, 120)

Descartes commentator S.V. Keeling argues that Descartes' method, as expressed in the above rules, rests on three mental operations: intuition, deduction, and enumeration. These three abilities constitute our human reason. Intuition involves directly apprehending the simplest components (or 'simple natures') of a subject matter. Deduction is not merely syllogistic, but a process of inferring necessary relations between simple natures. Enumeration is a process of review which we use when deductions become so long that we risk error due to a faulty memory.

What, however, is meant by the criteria of 'clarity' and 'distinctness' by which Descartes describes the intuitive apprehension of simple natures and their relations? In various works, Descartes has a number of attempts at defining these important concepts. (E.g. Principles of Philosophy 1.45; cf also Leibniz 'Meditations on Knowledge, Truth and Ideas (1684).) By 'clarity' is meant something like the presence of an idea or object for attentive inspection by the mind, so that all its qualities can be observed. Descartes often uses the analogy of viewing a material object close up and in good light. By 'distinctness', on the other hand, is meant that the relationships between the idea or object and anything else are themselves clear, such that what truly belongs to the idea or object can be distinguished from its relationships. The reader should also notice the phrase 'never to accept anything as true' in Descartes' first rule. A quite radical initial procedure of doubting (testing whether it can be accepted as true) thus forms part of Descartes' method. This idea is pursued with the utmost ruthlessness in the Meditations.

Descartes realized that he needed a provisional set of moral guidelines to carry him through the transition from abandoning his prejudices to establishing the truth of things. He presents four such rules: (1) obey the laws of his country and adhere to his faith in God, (2) to be consistent in following positions, even if they seem doubtful, (3) change his desires rather than the order of the world, (4) to choose the best
Although Descartes' method had its advocates, it was also criticized by his contemporaries, such as the mathematician Pierre de Fermat, and ultimately dismissed. Leibniz says that Descartes' rules amount to saying 'take what you need, and do what you should, and you will get what you want.'

b. Religion, Science and Scepticism

Descartes dedicates the Meditations to the faculty of the Sorbonne, which was the divinity school of the University of Paris. For centuries, the Sorbonne was center of Catholic theology. By dedicating his work to the Sorbonne faculty, Descartes' was announcing that his philosophy was consistent, so far as he was concerned, with traditional Catholic theology. Descartes was a devout Catholic and had no desire to offend the Church, though he certainly hoped to make a contribution to its understanding. Descartes announces at the opening that there are two driving issues behind the Meditations: proving the existence of God and the immortality of the soul through natural reason. One would expect divinity school faculty to approve of this plan. However, it is not entirely clear that these issues (especially the latter) are his chief concern in the Meditations.

Partly, of course, Descartes is emphasising common ground in order to ease the way for what he knows will appear to be some very radical ideas. For example, he believed that Aristotelianism had no place in the new scientific age. Cautioned by the fate of Galileo, Descartes proposed his new anti-Aristotelian theories diplomatically. In his Principles of Philosophy, for example, he cautiously suggests a theory of the solar system similar to Galileo's. He expresses his hope that his theory could 'be used in Christian teaching without contradicting the text of Aristotle.'

Returning to the Dedication, Descartes discusses the importance that the Sorbonne faculty themselves place on rational proofs. He also notes that he intends to follow the method of investigation proposed in his Discourse on the Method. According to Descartes, geometricians rarely show the falsehood of accepted truths and demonstrations. By contrast, philosophers typically show the falsehood of contentions without venturing to explore truth. Descartes closes the dedication pleading with the faculty of the Sorbonne that their support and influence is necessary for the Meditations to be seen as a successful refutation of scepticism. The refutation of scepticism being another instance of the common ground he was trying to emphasise between himself and the Catholic theologians.

In his earlier Discourse on the Method, Descartes also discusses the existence of God and the nature of the human soul. In the 'Preface' to the Meditations, he explains that the earlier discussion in the Discourse was intentionally brief. The Discourse was published in French, as opposed to Latin, and thus available to common readers. Accordingly, he toned down the arguments in the earlier work to keep 'feeble minded' people from losing the thread, or leaping to conclusions too quickly. The Meditations, by contrast, were written in Latin and not originally intended for the casual reader - although, as we know, Descartes welcomed a French translation.

c. Hyperbolic Doubt

Descartes opens his Meditations by reiterating his desire to have only true beliefs, expressed as the first rule in the Discourse on the Method. Descartes proposes to systematically follow a process of doubt. The
doubt is not a simply common sense one, though, as when I doubt whether black cats are harbingers of bad luck. Instead, his doubting process is a philosophical one, and sometimes called 'hyperbolic' (or exaggerated) doubt, in which the issue is whether a class of knowledge can be in any way doubted. The goal of this doubting process is to arrive at a list of beliefs that are certain and indubitably true. It thus may be viewed as a systematic doubting experiment.

Descartes does not intend to doubt the truth of every specific judgement that comes into his head - an impossible task - but to undermine wherever possible the foundations of his views. Descartes can do this by discussing broad classes of supposed knowledge: for example, knowledge from the senses, or knowledge from mathematical reasoning. If we assume that beliefs within each class will, from their nature, have similar foundations, then doubt in any area of the class will throw the whole into doubt. The main class of knowledge he brings under suspicion is the reliability of sensory information. The experiment consists of articulating several reasons by which sensory information can be brought into question. When he presents the last of these reasons, there are virtually no items of knowledge he can have confidence in.

Much of Descartes argumentation rests on a distinction that, later in the history of philosophy, became known as that between primary and secondary qualities. Briefly, we look at an apple and perceive qualities of redness, sweet smell, roundness, and singularity. Descartes recognized that the qualities of redness and sweet smell do not really belong to the apple. Instead these qualities exist only in the mind of an observer - as a product of the relation between the apple, my sense organs, and my mind - and are then illegitimately imposed onto the apple as it is in itself. These have been traditionally called secondary qualities. By contrast, the qualities of roundness and singularity belong to the apple itself, and are not products of the relation to the observer's mind. These have been termed primary qualities. Secondary qualities arise from (what are assumed to be) objects of the senses, and primary qualities from objects of mathematics. The following illustrates the connection:

<table>
<thead>
<tr>
<th>Type:</th>
<th>Objects</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary</td>
<td>Objects of Sense</td>
<td>hardness, heat, light, odour, colour, taste, sound</td>
</tr>
<tr>
<td>Primary</td>
<td>Objects of Mathematics</td>
<td>quantity, shape, time, magnitude</td>
</tr>
</tbody>
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An apple would be a secondary object, or object of the senses, when we consider only its secondary qualities of redness and sweet smell. On the other hand an apple is a primary object, or object of mathematics, when we consider only its primary qualities of shape and singularity (quantity). In Descartes' version of this distinction, the root of the primary/secondary distinction is the attribute of extension (or existence in space, including motion). All primary qualities are features that necessarily (and really) belong to extended objects. All secondary qualities, by contrast, do not necessarily (or really) belong to extended objects and, thus, are spectator-dependent. (Please compare the discussion beginning at Principles, part one, §48, I, 208ff.) However, it should be pointed out that Descartes has not yet offered a complete proof that extension is the key feature of spatial objects, and that all other properties are 'secondary'. Nor has he even proved that there are any spatial objects at all! He will return to extension and space towards the end of the Meditations. In any case, in view of this primary/secondary distinction, when Descartes doubts the reliability of his senses, he must find reason to doubt both his primary and secondary perceptions. The initial importance of this distinction, then, is that Descartes needs two sets of arguments in order to place into doubt the reality of both primary and secondary objects.

That which can be doubted is that which belongs to a class of 'knowledge' that has ever in the past failed, or which it can be imagined will fail under a (not impossible) hypothesis. Descartes begins his systematic
doubting experiment by pointing out an obvious credibility problem with our senses: optical illusions. Descartes begins doubting the reliability of his senses by noting that we perceive distant objects to be much smaller than they really are. In other words, in some instances, the class of sensory knowledge has been known to break down; and for this reason, it can never be absolutely trusted. This, though, is somewhat trivial, and does not undermine the general reliability of the senses, since it is precisely through other sensory knowledge that we know that the object is further away. If the class of sensory knowledge is self-correcting in this fashion, it is perhaps not radically unreliable. Continuing his doubting experiment, Descartes suggests the possibility that he is dreaming. Here, Descartes is proposing a hypothesis, which is not intrinsically impossible (I am dreaming even though I believe myself to be awake), but which calls into question the basic validity of the class of sensory knowledge. This, though, only brings into question the existence of objects of the senses (i.e., secondary qualities), and does not affect objects of mathematics (i.e., primary qualities). The basic mathematical principles of space and time, Descartes says, are the 'components' from which my elaborate dreams are constructed - and as such cannot be doubted along with the existence and secondary qualities of the particular objects, on the basis of the dream argument.

Taking his doubts further, Descartes initially speculates that God is deceiving him about all of the things that he believes or perceives. This would happen if God were actively putting ideas into my head that, prima facie and in all cases, seemed to have some other source. (The notion of deception, as Descartes is using it here is more limited that that which he employs from Meditation 4 onwards. Please see Meditation 4 for our discussion of commissive and omisive deceptions.) Descartes includes primary objects in this hypothetical deception - thus, God deceives me even about the ideal objects of mathematics. Descartes writes:

... [S]ince I sometimes believe that others go astray in cases where they think they have the most perfect knowledge, may I not similarly go wrong every time I add two and three or count the sides of a square, or in some even simpler matter, if that is imaginable? (II, 14)

Suggesting that God is a deceiver causes him problems, though, because according to traditional Christian theology, infinite goodness is one of God's necessary attributes. Goodness and deception seem opposed. If backed into a corner, some might deny God's existence rather than admit that he is the cause of deception. And yet, denying God, Descartes argues, could only make him more vulnerable to deception. This takes him into a discussion of scepticism, and he reflects on how far astray his doubts may take him, and to what extent they are justified. Discussions of scepticism during the modern period often drew a distinction between speculative and actional scepticism. A speculative sceptic merely uncovers theoretical problems, and an actional sceptic continues by recommending a course of action. With religious beliefs in particular, actional scepticism was viewed as more dangerous as it might recommend that act as though there were no God. However, Descartes only proposes theoretical doubt. In any event, he revises his doubt so not to run counter to traditional Christian belief and, accordingly, proposes that a malevolent demon or genius (and not God) deceives him. Simply considered as hypotheses, there is no way of comparing the plausibility of the existence of an infinitely good deity, with the existence of a malevolent demon.

With the demon hypothesis, Descartes' procedure doubt has reached its peak. Such a demon could cause ideas to appear within Descartes' mind such that he was deceived not only about the existence and nature of secondary qualities, but even about the existence and nature of primary qualities. It follows that if there is to be knowledge, then either there must be a new, as yet unmentioned ground of knowledge, or new reasons must be found that independently remove the above doubts. In either case, there must also be a means of testing (a 'rule of truth') whether such knowledge is indeed beyond doubt. Descartes' philosophy now moves to explore such issues.

There are, however, a few features of Descartes' method of doubt that are worth pulling out at this point.
First, and reasonably enough one might think, Descartes never doubts that his ideas arise in some fashion. The source might be external objects, or his own dreams, or a hidden faculty of self-deception, his own activity of thinking, or God, or an evil genius. (This problem of the sources of ideas corresponds with the notion of a 'class' of knowledge introduced above.) Because there are so many possible sources for my ideas, and because there is no fool-proof way of deciding between them, Descartes is able to doubt the veracity of most of the ideas he formerly held to be true. This question of the origin of his ideas is key. For, in Meditation 6, Descartes will be able to solve his initial epistemological scepticism by eliminating all but one of the sources. (Moreover, the question of the origin of ideas also forms the basis of Descartes' proof for God's existence in Meditation 3.)

Second, Descartes is offering a broadly representational picture of how ideas might relate to reality. Ideas of particular objects 'represent' the world. This in turn has several consequences. (a) Ideas are different from things in the world. (This already moves Descartes towards a broadly realist epistemology, and thus can be interestingly contrasted with the idealism of Berkeley.) (b) Ideas (at least of secondary qualities) do not resemble the world: my idea or feeling of hunger (to take one of Descartes' favorite examples) has no resemblance to whatever may be happening in my stomach, if I have a stomach. Because of this lack of resemblance, there is no intrinsic difference between an idea that does not correspond to a real world, and one that does. Without that intrinsic difference, Descartes is initially unable to trace his ideas of things back to their source. (The situation is more complicated in the case of primary qualities, however. Although my idea of a triangle is not triangular, nevertheless Descartes suggests it does have a relation of adequacy that ideas of secondary qualities often or always lack [see the beginning of Meditation 5].) Issues of this type, as we shall see, lead Descartes to worry about the notion of innate ideas. (c) Finally, representation means that there are two different ways in which an idea can be 'false'. First, it can represent real things falsely (as in the case of distant objects appearing smaller). Second, it can represent as existing things that do not exist. Again, there is no intrinsic way of distinguishing between these cases. Our inability to distinguish between these two types of falsehood is what makes the dreaming and malevolent demon hypotheses so powerful. For, if in any case I could so distinguish, then I would be able to eliminate some of the hypothetical sources of my ideas. Descartes' concerns about the various modes of falseness return in his discussion of judgement and will, beginning in Meditation 3. Metaphorically speaking, we might say that this representational model of the relation between ideas and the world has placed Descartes 'at a distance' from his world, and made both possible and necessary the method of doubt.

3. Meditation 2

Descartes opens Meditation 2 by describing the extent of his doubt. Virtually every item of knowledge he previously believed is subject to some kind of doubt for reasons given in the previous meditation. The ancient Greek engineer Archimedes said 'give me a fulcrum and a firm point, and I alone can move the earth.' Analogously, Descartes believes that if he finds one indubitable truth, together with a means for employing it, then this will be the foundation of a true philosophical system. The 'firm point' is his existence: 'this proposition, I am, I exist, is necessarily true whenever it is put forward by me or conceived by my mind' (II, 17). Even an evil genius cannot deceive him in this matter. In his *Discourse on the Method*, Descartes summarizes his line of reasoning in the famous phrase, 'I think, therefore I am' (or in Latin, 'cogito ergo sum'). (The 'fulcrum' - or as we expressed it above, the 'means for employing' his foundation - is clarity and distinctness, which we discussed above in the context of Meditation 1. Descartes will be employing this 'rule of truth' throughout the *Meditations*, although he is not fully explicit about its importance until the beginning of Meditation 3.)
Descartes borrowed this strategy from Augustine's attempt to refute scepticism in his own day. Augustine writes, 'On none of these points do I fear the arguments of the sceptics of the Academy who say: what if you are deceived? For if I am deceived, I am. For he who does not exist cannot be deceived. And if I am deceived, by this same token I am' (City of God, 11:26).

Much of the philosophical debate about Descartes' famous move revolves around how it is appropriate to analyse Descartes' argument, and even whether it is an 'argument' as such at all. For example, we might think that Descartes move is a miniature argument, which would go from 'I think' to 'I exist'. But that assumes a missing premise, namely, that 'Thinking things exist'. Descartes himself helps clarify this in his reply to the second Objections to his Meditations. In these Objections, the critic contends that all demonstrative knowledge depends on God, which isn't proven until Meditation 3; but, Descartes deduces his existence in Meditation two. Descartes replies that the cogito is not deduced, but is recognized, in any particular case, by a simple and immediate act of mental intuition. The intuition exhibits perfect clarity and distinctness. Presumably, this is one of the notions Descartes has in mind when using such phrases as 'whenever' I think, I must exist (Meditation 2, II, 17)) - or similarly 'at the same time as' I think, I must exist (Principles part one, §7, I, 195). From such simple intuitions, we can then generalise in order to say 'thinking things exist', but the generalisation is founded on our initial, simple intuition. Descartes makes a similar point about general or abstract knowledge concerning what is thinking, or what is existing, in the sixth Replies. Such knowledge is always preceded by, and grounded on, unmediated 'inner awareness'.

Once Descartes recognizes the indubitable truth that he exists, he then attempts to further his knowledge by discovering the type of thing he is. Trying to understand what he is, Descartes recalls Aristotle's definition of a human as a rational animal. This is unsatisfactory since this requires investigating into the notions of 'rational' and 'animal.' Continuing his quest for identity, he recalls a more general view he previously had of his identity, which is that he is composed of both body and soul. He can't refer to himself as a thing that has a body, though, since this involves sensory perception. According to classical philosophers such as Plato and Aristotle, the key attributes of the soul involve eating, movement, and sensation. He can't claim to have these attributes of the soul since this involves a body, knowledge of which, in turn, is based on the senses. Descartes continues examining other theories of human existence and attributes about himself that he can imagine. Descartes concludes that the attribute of thinking is the only quality that he can justifiably claim at this point. But he is quick to point out that thinking is the only attribute about which he is sure - not that thinking is the only attribute that he has. I am, then, at least a thing that thinks.

Despite this caution, the attribution of thought to the soul is the starting point of a radical ontological distinction which carries Descartes through his Meditations. That distinction is between thinking substance (res cogitans) and extended substance (res extensa). The two substances are mutually exclusive. A thinking substance is nonphysical or spiritual in nature, and an extended substance is physical, but not capable of consciousness or thought. Descartes has not yet offered proof of these ideas, but the reader should keep them in mind. For Descartes, a thinking thing is 'a thing which doubts, understands, [conceives], affirms, denies, wills, refuses, which also imagines and feels.'

Note Descartes' general strategy for adding to his knowledge. He is first concerned with the issue of our inner, mental nature, and will only much later address the issue of external objects (in Meditation 6). As we noted above, this ties in nicely with the first-person 'narration' of many of his philosophical works. Descartes then anticipates the criticism that he is going about his investigation backwards. For, it seems that knowledge of external objects is more obvious and distinct than knowledge of the mind, and much more obvious than knowledge of my personal identity (the continuity or sameness of the mind as it thinks now this, now that). Everyone knows what an apple is (an external object), but few people can properly answer the question 'who am I'. Thus, it seems that Descartes should tackle the easier problem of external objects first.
Descartes does not agree that he proceeding in a backwards fashion, and argues that the properties and identity of our mind are actually more clear and fundamental than perception of external objects. He makes his case by comparing our perceptions of a piece of wax at two times: once while the wax is in a solid state, and later after the wax has been melted by a fire. Between these two states, the wax somehow loses its hardness, colour, shape, odour, and so forth. That is to say, we must forgo all the sensible properties that might allow us to identify it as the same substance. Thus, our senses alone cannot inform us of the continuity of the two states of the wax, so what does? The continuity of the wax cannot be established though the faculty of the imagination either, since we could imagine an infinite variety of changes the wax could go through - and however powerful my faculty of imagination it is not infinite. Descartes concludes that the continuity of the wax is established neither by sight, nor touch, nor imagination, but by an act of the mind alone. Knowledge within the mental realm precedes knowledge of the material realm.

Descartes considers possible criticisms to his conclusion that we understand the physical world through an act of the mind. In common language we claim that we 'see' the same wax in its two states (as opposed to 'mentally intuit' the same wax in its two states). Thus, common language seems to suggest that the continuity of the wax is a function of 'seeing' (i.e., the senses). When I look out the window, I conclude that we see people crossing the road. All that appears to my senses, though, is clothing; and why could the clothing not be covering machine: automatons or 'robots'? Nothing in the senses renders that unlikely; the judgement that these are people (or the judgement that this is still wax, and the same piece of wax) is 'actually grasped solely with the faculty of judgement, which is in my mind.' Furthermore, even if Descartes' analyses are wrong, even if he determines through sight or imagination that the wax continues after all, then this still presupposes that Descartes himself exists and thinks. However you cut it, the direct awareness of the mind is prior to any awareness of external objects.

4. Meditation 3

Descartes notes that when he contemplates the certainty of his existence, he knows the truth of his existence clearly and distinctly. He proposes a general rule: everything he perceives clearly and distinctly is true. This rule has in effect been in operation throughout the previous discussions. Descartes would like to use this general rule in order to move beyond the 'I think, I exist', for example to show both the existence of external objects and the truth of mathematics. Unfortunately, knowledge of external objects does not rise to the level of clarity and distinctness. Sensory judgments about particular things in the external world at first seemed vivid and immediate, but later proved to be questionable. By contrast, mathematical judgments are perceived in a manner that appears to be clear and distinct. Such judgements were thus able to pass unscathed through most of the tests in the procedure of hyperbolic doubt. However, an obstacle remains: it is still just possible that God may be deceiving him irrespective of this initial appearance of clarity and distinctness. To put the general rule of clarity and distinctness on sound footing, Descartes must (a) prove God's existence, and then (b) show that God is not a deceiver. It thus appears that, important as it is for other reasons, the proof for God's existence is not really a central issue of the Meditations but is merely a device for establishing methodology.

In constructing his argument for God's existence, Descartes makes several prefatory comments about the nature and content of human thought. He begins by outlining the various types of thoughts we have, which include ideas, thoughts, volitions and judgments. Descartes distinguishes between: (i) Images (ideas) (e.g. soup); and (ii) the manner of our having the images or ideas. Of the latter, he distinguishes between 'volition' ('I desire the soup'), affections ('The soup tastes good'), and what he calls 'judgements' ('There is soup in the bowl' or 'the soup made me feel better'). Only judgments have a truth value,
Descartes argues, and consequently most deception comes about through bad judgments about ideas. That is to say, we can distinguish between all of the ideas that make up a judgement, and the judgement itself. The ideas themselves cannot really be true or false; only in special cases where an idea stands for something that is, in reality, a negation or absence (e.g. the ideas of cold or vacuum) and thus literally represents nothing, can we say that it is 'materially' false. (Note that 'unicorn' is not materially false; it represents a possible object that happens not to exist.) For the most part, it is the judgements we make about ideas that are true or false ('formally' true or false): e.g. 'There is a unicorn in your rose garden' is (probably!) false. (We might speculate on Descartes' behalf that the idea of my own thinking, on the other hand, might be unique in being the only idea that immediately leads to an existential judgement: 'I exist."

There are three kinds of ideas, Descartes continues: fictitious (invented), adventitious (from external objects), and innate (inborn). We can be pretty certain that some instances of the first class exist, but cannot be certain yet about the other two classes (because of the issues discussed at the end of the section on Meditation 1). Thus, a final prefatory issue concerns the adventitious ideas (that is, ideas of external objects). Are they really produced by external objects as they seem to be? One reason why we believe adventitious ideas have their origin in physical objects (as opposed to being mere fictions of the mind) is because we are taught this by nature. Descartes believes that nature teaches us in an unabsolute sense (that is, by a spontaneous impulse) that adventitious ideas are caused by external objects. Feeling discomfort, we 'naturally' draw away, just as if the source of the discomfort and our bodies were both real objects in space. As philosophers, however, we cannot just trust natural impulses, since they often lead us astray, such as with moral intuitions. Another reason why we believe adventitious ideas have their origin in external objects is that these ideas are independent of our will or volitions. We may not rely on this reason, though, since we may have an unknown mental faculty that produces such ideas without the corroboration of our conscious will. Descartes next argues that even if adventitious ideas were caused by external objects, an idea may in no way resemble the object causing it. He illustrates this problem with our two ideas of the sun: the visual one and the intellectual one derived from the mathematical study of astronomy. The latter, although less a straight-forward 'picture' of the object, probably 'resembles' the real sun more accurately. (This again goes back to primary and secondary qualities.) Descartes concludes that only a 'blind impulse' makes us believe that adventitious ideas correspond to real physical objects.

Since adventitious ideas have no clear basis in external objects, Descartes cannot attempt to prove God's existence through a posteriori arguments (that is, arguments based on our perception of external objects). For example, he cannot argue for God's existence based on apparent design in the world, since he cannot trust his (apparently) adventitious ideas of design. However, there is another path open to him: as we saw above, he can rigorously separate the ideas we have from the judgements we make about whether and how the represented objects exist. Thus, he can simply examine the content of his ideas, ignoring their connection with external objects. In his words, he will consider his ideas as merely 'modes of thought.'

The first step in applying this new procedure is to discuss a principle of causality: 'there must be as much in the total efficient cause as there is in the effect of that same cause.' The notion of 'efficient cause' refers to Aristotle's analysis of causation, which was also widely taken up in Medieval philosophy. However, while in Aristotle, efficient causes were of secondary importance metaphysically, in Descartes efficient cause becomes practically equivalent to cause per se. (Another example of Descartes' new approach vis à vis Medieval thought concerning the physical world.) An 'efficient cause' of X refers to the entity that incites the change that is, or leads to, X. Thus 'total efficient cause' refers to the collection of entities that, together, bring about the thing. (Although we might say that a single word can cause a war, the word by itself would not be the total efficient cause.) Descartes is basically claiming that the cause must be adequate to incite or bring about the effect. For example, if an object has 5 units of heat, then its total cause must have at least 5 units of heat. (The heat of course could be in a different form: as potential or chemical energy.) This principle traditionally has been called the principle of sufficient reason, and he believes that we know this innately. Similarly, Descartes argues that something that is unreal cannot not (on its own) bring about a thing that is real; or again, something simple cannot (on its own) bring about.
Extrapolating from these principles and definitions, Descartes claims that something that is less perfect can not (on its own) bring about a thing that is more perfect. By 'perfection' is meant, let us say, the hierarchical level of a thing within the hypothetical createdness of all things; that is, its relation vis a vis the infinite mind, infinite goodness, etc. of God. Now, importantly, we can talk about perfection in this way even though we have not proved the existence of God. For, in a similar way, we can say that someone is a more perfect cook than someone else, even though no one exists who is the perfect or ideal cook. In this case, though, unlike the idea of God (Descartes thinks) the idea a perfect cook arises because we extrapolate from greater or lesser cooks of our experience. This idea of perfection is related to the notion of a degree of reality (and Descartes often speaks in those terms) in so far as the perfect being is thought to have a self-caused or necessary existence, whereas 'lesser' beings are considered 'contingent'. Moreover - and although Descartes has not yet proved this yet - it seems to make sense to say that primary qualities are more real than secondary qualities, and that the substances that have those primary qualities are more real than the qualities in themselves, and so forth. Furthermore, the idea of perfection is related to the notion of complexity by way of what Augustine called the principle of plenitude: the cosmos (and thus its creator) is the greater the more complex it is.

Descartes argues that the principle of sufficient reason applies to ideas as well as to physical objects. In order to understand his discussion we need to distinguish between three ways of speaking of the level of reality or perfection. First, something contains a degree of perfection 'formally' if it contains that degree in itself, and is capable of causing such a degree of perfection in another thing. Second, something contains a degree of perfection 'eminently' if it contains a greater degree and is thus capable of causing at least the degree. Third, something contains a degree of perfection 'objectively' or 'in representation' if it is an idea of something that is represented as containing such a degree of perfection. (See Descartes' reply to the second Objections (II, 113-4).)

Now, when we view ideas merely as modes of thought, one of the features by which ideas differ from one another is that some seem more perfect or complex than others. In Descartes' terminology, a more perfect or complex idea has greater objective reality than a less perfect or complex idea. For example, ideas of eternal substance, such as God, have more perfection than ideas of finite substance, such as trees or dogs. To apply it to our ideas and the qualities those ideas exhibit merely as modes of thought, Descartes reformulates the principle of sufficient reason to say that the cause of an idea must have reality formally or eminently as the idea has reality objectively. That is, an idea with a moderate amount of objective reality (let's say, with five units of complexity) must be produced ultimately by something with at least that much formal reality (five or more units of complexity). Based on the principle of sufficient reason as it applies to ideas, Descartes believes that there are important conclusions we can draw about the origin of specific ideas. Descartes believes that his ideas of people, animals or even angels could have arisen from within himself since they can arise from ideas of himself. He continues discussing the origins of ideas of physical objects, particularly regarding their secondary and primary qualities. He believes that his ideas of light, colors, sounds, odors, tastes, and heat (that is, secondary qualities) need no explanation outside of himself. Primary qualities too, such as substance, duration, and number, may also be explained by the idea of himself. If it turned out that a hidden faculty of idea-production in his mind produced all these ideas, that would not contradict the principle of sufficient reason.

Finally, Descartes considers the idea of God that is in his mind. This idea is that of 'an infinite and independent substance,' that is infinitely perfect. Where does this idea come from? Such an idea requires an explanation beyond himself, because Descartes himself is a finite and thus imperfect being - the fact that he can doubt is proof enough of that. (It is impossible to imagine God having doubts.) Moreover, that explanation must have as much formal reality as the initial idea of infinite perfection. This, then, is his proof for God's existence:
1. We have an idea of that which has infinite perfection.
2. The idea we have of ourselves entails finitude and imperfection.
3. According to the principle of sufficient reason, there must be as much reality (formally or eminently) in the cause of any idea as (objectively) in the idea itself.
4. Therefore, the idea we have of infinite perfection originated from a being with infinite formal perfection.
5. It follows that the idea could not have originated in ourselves or our ideas of ourselves.
6. The origin of the idea could only be the real existence of the infinite being that we call God.

Descartes addresses three possible criticisms of his argument. Each of these possible criticisms suggests that our idea of infinite perfection need not be caused by God himself. A first possible criticism is based on Descartes' assumption that we initially possess an idea of the infinite, and that our idea of the finite consists of the negation of our idea of the infinite. A critic might argue that the opposite is the case: we have an initial idea of the finite and our idea of the infinite is its negation. (Just as we assumed in the example of the perfect cook above.) In this case, we could be the cause of infinite perfection by (a) taking the idea of finite imperfection from ourselves, and (b) negating this idea. However, both the idea of a cook, and the idea of a perfect cook, are finite ideas (involving only finite complexity, for instance). To arrive at the latter by the negation of the limits of the former is a possible operation for a finite mind. (There is a relation here to Anselm's reply to Guanilo's objection concerning the perfect island, in their debate on the ontological argument.) But the idea of God is not a finite idea in this sense, and cannot be arrived at by a finite mind through negation of finite ideas any more than by way of the positive imagining of ideas. (See also the Fifth Objections and Replies (II, 252).)

A second possible criticism is that the idea of infinite perfection is 'materially false and can therefore be from nothing.' More simply, the suggestion is that the idea of infinite perfection is an incoherent concept, and thus needs no explanation beyond itself. However, Descartes argues that the notion of infinite perfection is clear and distinct in the highest degree, and thus requires an explanation. (Descartes and Arnauld continue the discussion of this problem in the Fourth Objections and Replies.) A third possible criticism is that perhaps we are potentially infinitely perfect, and thus produced the idea of infinite perfection from our hidden potential. Descartes gives three replies to this third criticism. First, if his potential perfection can be actualized only gradually (through a gradual increase in knowledge), this implies that he is finite. And, if he is a finite being, he could not produce the idea of infinite perfection. Second, he argues that even if his knowledge would increase gradually over an infinite amount of time, at no point would he have infinite knowledge. Third, he argues that the objective being of an idea cannot be produced by a merely potential being.

Another criticism raised in the Fifth Objections (II, 205ff) is that it is impossible for a finite mind to comprehend an infinite idea of God, just as (in Descartes' account) it is impossible for a finite mind to generate an infinite idea. In other words, human beings do not have an idea of God in the sense needed by Descartes' argument. Descartes replies by distinguishing between a fully adequate idea of something (which he claims a finite mind cannot have even of the most simple entity) and an 'understanding suited to the scale' of our finite intellect. In other words, of course our positive idea of God's infinity is not an adequate comprehension of God, but it is sufficient for us to know (a) that the idea could not have originated with us; and (b) that it is the idea of an infinitely perfect being. In the 'Preface' to the Meditations, Descartes discusses a criticism of this argument as it appeared in the Discourses (II, 7). There, he implicitly makes a similar distinction between the finitude of the ideas of our minds, and the possibility of finite ideas representing infinite entities (and thus having non-finite objective reality).

Following a similar line of reasoning, Descartes concludes at the end of Meditation 5 that this idea of God must be innate in him, as 'the mark of the craftsman stamped on his work' (II,35). It is from this unfalsifiable mark, then, that God's existence can be known. Recall our discussion of Descartes' views on
the representational nature of mental contents, at the end of the section on Meditation 1 above: the idea of God is the only idea the mere inner characteristics of which allow us to deduce with certainty the origin of the idea.

We should note that, despite its concern with 'perfection', this argument must be accounted a version of the cosmological argument, because of its central concern with causes and effects. Descartes also provides a version of the ontological argument in Meditation 5.

Descartes is quite happy with these arguments, but he admits that their abstract quality means it is difficult for him to remain convinced once his concentration has wandered. How, some time after thinking through the argument, can we remain sure that it is sound? Descartes now wishes to show that God is the cause of his existence. If Descartes can show that even his own existence (as a being that has an idea of God) depends upon God, then that will lend to his certainty about God's existence the same utter transparency he has concerning his own existence and the existence of his ideas. But there is another important reason for the discussion of the dependence of his existence: by showing the connection between God and himself, Descartes can argue that by virtue of that connection it must be impossible for his memory to be systematically flawed. If memory is reliable, then (in general) one can rely upon the memory of proving something, even after one's attention has wandered. This, as we shall see, is of the utmost importance, for otherwise, having to keep reiterating the same arguments over and over, it would be impossible for the philosopher to progress.

Descartes constructs the argument through a process of elimination, arguing that strictly speaking he could not be produced by (a) himself, (b) a finite cause less perfect than God, (c) by several partial causes, or (d) by his parents. God is the only possible cause for his existence. The others can easily been seen as either inadequate or fragmentary explanations.

Descartes gives two replies to the suggestion that he was derived from himself. His first reply is that if he caused himself, then he would be God since he would give himself every perfection he could. Descartes' second reply is based on the fact that he exists over time. Each of the parts and moments of his existence depends on others. He then asks whether 'I possess some power enabling me to bring it about that I who now exist will still exist a little while from now?' He answers that he does not have the power for duration, so it follows that he doesn't have the power for creation either (these two powers being not really distinct). (This point is particularly significant since it allows Descartes to argue against seeing the series of contingent causes as an infinite regress: that which sustains my existence must be a real, necessary, first cause.) A further suggestion is that he was caused by a finite cause less perfect than God. He responds noting that this finite cause would have to possess the idea of infinite perfection too, hence we need to inquire into its cause as well. Another suggestion is that he was created by several partial causes. This fails, though, since the concept of infinite perfection is unified, so the cause of it must be unified. Finally, he addresses the suggestion that he was caused by his parents. Although his parents may be the cause of his body, they are not the cause of his thinking existence insofar as he has an idea of infinite perfection. Descartes concludes that God must be the cause of him, and that God innately implanted the idea of infinite perfection in him.

This dependence of Descartes' existence upon God's provides yet another, reinforcing plank of the cosmological argument for God's existence. In general, the cosmological argument always begins with a contingent something, and then reasons towards a necessary being. Had Descartes been able to account for his own (initial and continued) existence in some other way (perhaps by claim that he, himself, was a necessary being), then the cosmological argument could never have really taken off. But more than that: he has provided an account of the possibilities of his own creation and conservation in existence that weaves the idea of God into the nature of that existence. Descartes now defines himself, at least in part, as the being that has the idea of infinite perfection. His mind could easily wander from an argument that begins with an idea of God, if that were just one idea among others (earlier in Mediation Three Descartes
had lumped all ideas together in just that way). However, the fact that he exists as a being that has within it an idea of an infinite perfection serves as a continually present and unmistakable mark of his being contingent and thus dependent upon a really existent God. It is significant, then, that Descartes should end Meditation Three by withdrawing into contemplation of God. (This notion of radical dependence is also obviously of the highest importance theologically.)

Descartes closes Meditation Three arguing that God is not a deceiver since deception is an imperfection, and God is infinite perfection. This solves the problems raised at the beginning of this section. Descartes also claims that, as God's creation, it is highly plausible that God made him in his 'image', and that he understands God by those same acts of inner perception by which he understands himself. The argument is very compressed here. Among other things, these three points together will mean that Descartes can rely upon such mental abilities as intellectual perception and memory. Since, had his creator given Descartes a systematically flawed intellectual perception, Descartes would be unable to grasp the idea of God and pursue its implications, and that would be equivalent to God's deceiving him. If intellectual perception is made in the image of God's perfection, however, then the whole method of clear and distinct ideas can be relied upon. The general reliability of memory is important, too. We already saw Descartes expressing doubts about his arguments once his mind wandered. Descartes seems to be suggesting that the argument demonstrating God's existence, together with my dependence upon God for existence, only needs to be worked through once - from that moment on, we can progress onto other topics, confident of truths that are built upon continually being perceived clearly and distinctly. However, Descartes only gestures towards these ideas at the end of Meditation Three; they become extremely important later (see below).

Towards the beginning of this encyclopaedia entry, we argued that Descartes' strongly advocated a distinction between faith and reason. This meant, for example, that Descartes could feel free to doubt the particular theological and philosophical perspectives of the Church, while remaining a Catholic. On many occasions, moreover, Descartes makes a more precise distinction: between those aspects of theology that are available to 'natural reason' - i.e. to the reasoning powers that belong to the human mind working on its own - and those that are objects of faith. (Descartes' fascinating account of transubstantiation being a good example of the former; the nature of the Holy Trinity being Descartes' most common example of the latter.) Faith in turn requires revelation and Grace. (See especially two letters to Mersenne, dated October 28th 1640 [III, 155] and March 1642 [III, 211].) Descartes however does believe that the results of natural reason, properly employed, can not be at odds with the theology of faith.

5. Meditation 4

At the close of the Third Meditation, Descartes has arrived at all of the fundamental principles he needs in his quest for truth: (1) he exists thinking (a foundational fact which is indubitable), (2) God exists and is not a deceiver, and (3) clarity and distinctness are reliable indicators of truth. Descartes' goal is to show that knowledge is possible and scepticism thus defeated; an important subordinate end in all this is to prove that we can rely on our senses to at least some degree, and that their prima facie claims concerning the external world can be verified after all. He believes he now has the tools in place to achieve these ends. Meditations 4 and 5 do not contribute directly to these goals, however. Meditation IV concerns the source of human error. For it might be objected to Descartes' arguments thus far that, if in any sense God is responsible for our mistakes, either directly or indirectly, then this obviously would throw into doubt the newly arrived at claim that God is not a deceiver. Thus, Descartes needs to find an account of error that avoids two traps: (1) the trap of accusing God of deceiving us; and (2) the trap of making certain knowledge seem impossible.
Descartes' concept of 'error' is broad, referring to any mistaken judgment whatever. This includes assertions, predictions, ethical judgments, or judgments leading to an action. Descartes begins his quest for the origin of error by considering several theories which he ultimately rejects. He first considers whether God could be the cause of his error directly. He quickly rejects this, though, since God is not a deceiver - this is essentially the same move as in Meditation 1, when the malignant demon is put in place of God's direct deception. He next considers the possibility that human error results from his faculty of judgment. That is, the human ability for form judgements is not perfect. This makes sense since he sees himself as finite, existing on a middle rung of the great chain of being between God and nothing. Thus, the possibility of error would seem to be a defect that we can blame on our faculty of judgment. However, it is unsatisfactory to say that human error results from his faculty of judgment since a perfect God would not place an imperfect faculty in him. Descartes is puzzled that God could have made him such that he would never err, yet he clearly does err, and he suggests that maybe he can never know God's purpose in allowing us to err, since the wisdom of God is above human intellect. However, he concludes that we should examine God's purpose in creation as a whole, not just his purpose in creating me personally in a manner that involves error. In other words, there is no contradiction in supposing that God's broad purpose, though a purpose suiting an infinitely perfect being, includes the narrower detail of our possessing a faculty of judgement that can fall into error.

Descartes next considers the specific faculties involved when we make mistakes: the understanding and the will. The distinction here between understanding and will occurs on the back of the earlier distinction between ideas as mere modes of thought, and judgement. He can find no reason to hold either of these faculties individually responsible for error. Our reason cannot be faulted since, first of all, the ideas we do have cannot be considered formally false (as we saw above in Meditation 3). And, secondly, concerning the ideas we do not have, this lack cannot be counted a positive defect of the intellect (a flaw), but merely a characterisation of its finitude. (The fact that my stapler cannot also write the documents that I staple together would not normally be considered a flaw in the device, merely a limitation of it.) I cannot complain of God that He did not give me a greater faculty of knowledge, as if I were somehow entitled to it! The intellect within its limits has no inherent defect, but it does have those limits. The faculty of the will itself does not produce error since the will is a perfect faculty (I can will anything) - indeed, my will is as perfect as God's (God's is only greater in terms of power, knowledge, and the objects He can affect). Descartes briefly discusses the free nature of our will. Even when strong motives stemming from the clear and distinct apprehension of things by our intellect incline us toward one direction, we choose all the more freely in that direction. Freedom is at its lowest when no motive in the intellect moves me more in one direction than in another. This is because, as we shall see, it is the perfection and role of will to follow our knowledge, rather than to lead it.

Descartes considers a final view that error results when we extend our will beyond our knowledge. This, he believes, is the true explanation. According to Descartes, our will often becomes indifferent (or lazy) and accidentally extends beyond the bounds of our knowledge, asserting judgements where the understanding of the ideas is insufficient. He stresses that we should abstain from willing when we have insufficient knowledge. As an example, he explains that at this stage in his investigation he doesn't know whether his essential qualities include mind, body, or both. Hence, he abstains from any wilful judgment on this issue. In this and similar cases, he believes that proper use of freedom requires us to abstain from wilful judgment. Suppose, though, that, by chance, we stumble upon some truth beyond the scope of our knowledge. For Descartes, it would still be improper to use the will in this manner since I know clearly and distinctly that full knowledge ought to precede volition. (For a further discussion by Descartes of these ideas concerning will and freedom, see the letters to Mesland of May 2nd, 1644 (III, 233ff), and February 9th, 1645 (III, 244ff).)

Descartes next argues that even though God created us, God is not responsible for errors that we make. He considers several possible criticisms against God's role. One might first criticize God for giving us
limited knowledge. However, as we saw above, finitude is my essence, and this involves limited knowledge (God was not required to make me infinite). Second, one might criticize God for allowing us to extend our will beyond our knowledge. In reply, Descartes argues that God merely allows us to make erroneous wilful judgments, but does not cause us to make them. Third, one might also criticize God for not more actively preventing me from erring. For example, God could have given me clear and distinct perception of everything I would ever need to know. Alternatively, God could have impressed more firmly on my memory the importance of not extending my will beyond my knowledge. However, although this would make me more perfect, when I view the goodness of the whole universe, God may have some need for me to be a less perfect being. Again, we return to the argument that my limited view of the purpose of God's creation does not authorise me to judge whether any particular aspect of it ought to have been more perfect. Descartes argues that we don't need God to impress more firmly on our memories the importance of restraining the will. By developing the right habits, we can do this ourselves. Through practice, I can develop such habits when I remember previous circumstances in which I over-extended my will.

Descartes has here expanded on the notion of God not being a deceiver. The concept of deception has at least two elements: first, it would be a deception if God systematically made the prima facie source of ideas appear other than it in fact was. (I.e., some ideas appear to come from the external world, but this could be a deceptive appearance.) Accordingly, in Meditations 1 and 3, God's quality of non-deception was commissive in that a perfect God could not commit any act that would deceive. Second, it would be a deception if God somehow made it systematically impossible (rather than just difficult) for me to recognise deception of the first type - that is, if I were prevented from having or using the intellectual tools (such as clarity and distinctness) that I would need in order to discover deceptions of the first type. Thus, here in Meditation 4 (and again in Meditation 6) Descartes argues that a perfect God cannot omit any preventative measures that would be required for Descartes to understand the truth. God's non-deception, then, is also omissive. This commissive/omissive distinction is similar to the notion of sins of commission (such as the direct stabbing of an innocent person) and sins of omission (such as refusing to rescue a person from drowning). Descartes maintains, then, that a non-deceptive God can perform neither deceptions of commission, nor deceptions of omission. Much of Meditation 4, then, is trying to understand human error such that it cannot be seen as a deception by omission on the part of the creator of the human intellect. Incidentally, such considerations also remove the hypothesis of the malignant demon who 'stood in' for God in Meditations 1 and 2. And that in turn explains why Descartes does not feel the need to return to that hypothesis from Meditation 4 onwards.

6. Meditation 5

In the Fifth Meditation, Descartes presents another argument for God's existence. Like the argument in Meditation 3, Descartes' argument here does not appeal to sensory information (such as natural design). Instead, it too is based on the content of his thoughts. However, it does not hinge on the concept of sufficient reason, as in Meditation 3. The proof in this Meditation broadly follows Anselm's ontological argument; though in the first Replies, Descartes states why his version is not subject to the objections raised against Anselm by Aquinas (II, 82ff).

He begins Meditation Five noting that he can imagine an array of two and three dimensional shapes. Some of these, like triangles, portray clear and distinct attributes that necessarily belong to them, and do so irrespective of whether we have sensory knowledge of the objects of these ideas, or even whether these ideas have existent objects at all. That is to say, the intuitive inspection alone of some ideas yields the absolutely certain predication of attributes of them. Further, I cannot but assent to the truth of these
properties, at least in the act of intuitive inspection, since it is the nature of my will and judgement to follow the understanding where the understanding has such clear and distinct insight.

It is no accident that Descartes is using as his examples here issues of quantity of extension in geometrical figures; this is a further instance of his consistent privileging of primary over secondary qualities on the grounds of the former's clarity and distinctness. Although the actual argument is missing, Descartes signals his intention in the title to the fifth Meditation: 'The Essence of Material Things.' The aim, ultimately, is to prove that extension and extension alone is the essential property of all material things. This will be true even if material objects turn out not to even exist! (Please see the discussion of Meditation 6, below.)

In the same way as the analysis of the idea of the triangle, from the mere idea of God (that is, a supremely perfect being) we can arrive at necessary attributes that belong to him. Put more precisely, Descartes' proof of God is this:

1. I have an idea of a supremely perfect being
2. The idea of this being necessarily entails every perfection
3. Existence is a perfection
4. Therefore, the idea of a supremely perfect being entails existence (that is, a supremely perfect being exists).

My confidence in the existence of God is therefore just as high as the confidence I have in the truths of mathematics. Descartes' wording here implies that this confidence, though high, is less than perfect.

Descartes next anticipates three possible objections to his argument. A first objection to Descartes' proof is that God can be thought of as not existing. That is, we can separate his existence from his essential attributes; after all, this separation is certainly possible with any other idea I examine. Since, according to the imagined critic, we can conceive of God as not existing, then existence is not a necessary attribute of this idea. Descartes replies that we cannot separate God's existence from his essential attributes when we carefully consider this idea. With other ideas, we can separate out the existence from the other attributes only because the ideas are not of a perfect being. In the Fifth Replies (II, 262-4; and again in Principles part one, §14-5, I, 197-8), Descartes elaborates on this by distinguishing (conventionally enough) between merely possible, and necessary existence. There he claims that possible existence is not to be considered a property of an idea, since all ideas have that property by virtue of being ideas; that is, we normally consider ideas 'as if' their objects existed. However, necessary existence is different, and is a positive property. With God, then, the inclusion of existence among the necessary attributes is just as clear as the idea of a valley being included in the idea of a mountain.

A second objection to Descartes' proof commences with just that famous example: even though a necessary attribute of a mountain is that it be adjacent to a valley, it doesn't follow that any mountains or valleys exist. In the same way, even though the concept of supremely perfect being necessarily possesses certain attributes, it doesn't follow that this being exists. It only entails that should a God exist, His existence would be necessary. Descartes replies that this misses the analogy, and falls to his reply to the first objection. With ordinary ideas, to be sure, existence is never necessary - but other properties may be, and that is where the analogy lies.

Descartes' third self-criticism is that it is not necessary for me to think about or suppose the idea of God at all, but once I do, then existence is seen to be necessary. But how (the objection continues) is this different from it not being necessary for me to suppose some proposition that is false, but once I do then some other false proposition will follow necessarily? Descartes' reply is easy enough: my examination of the idea of God for what clearly and distinctly belongs to it is not necessary to be sure, but is also not false. Not everything I think about contingently is thereby false!
Descartes argues that absolute knowledge of anything, including geometry, depends on a prior knowledge of God. (Descartes repeats the argument here about the innateness of the idea of God, which was first made in Meditation 3.) Suppose we are analyzing an elaborate geometrical proof. While all of the ideas are fresh in our minds, we can see that the proof is sound. However, as time passes, the details of the proof are no longer in our minds, and we might then doubt the soundness of our proof. But, even if we forget the details of a proof, we can still rely on our established conclusion insofar as each step was perceived clearly and distinctly. Since God is not a deceiver, then we can trust that all we perceive clearly and distinctly is necessarily true. Unlike elaborate proofs in geometry, Descartes argues that it is quite easy to understand that existence is a necessary attribute of a supremely perfect being. The relative - indeed perhaps the ultimate - simplicity of the ontological argument seems to bypass the need for memory in comprehending proofs. This helps us to understand why Descartes felt the need, in Meditation 5, to supply a second proof for God's existence.

It follows, Descartes reiterates, that the certainty and truth of every science depends on knowledge of the true God. This famously poses a problem for Descartes, however: if it is clear and distinct perception or intuition that allows him to prove the existence of God, and it is the existence of God as a perfect being that guarantees the validity of the criteria of clarity and distinctness, then is not Descartes guilty of arguing in a circle? One of the writers of the Second set of Objections, as well as Arnauld who wrote the Fourth, noticed this apparent problem (II, 89; II, 150). In both these instances, Descartes reply involves restressing the above point about the distinction between present clarity and distinctness, and remembered clarity and distinctness. That is to say, it is Descartes' intellect itself that is capable, in a given present instance, of attaining to and being certain of that which is apprehended clearly and distinctly. Where present clarity and distinctness is attainable, there can be no doubt, even before the proof for the existence of a non-deceiving deity. (However, it might appear that Descartes contradicts this approach in the discussion of mathematics at the beginning of Meditation 3 (II, 25).) However, once the mind passes on to a new issue it must rely upon its memory of having previously been assured of clarity and distinctness. Descartes reasons that God's perfect and nondeceiving nature would be placed in jeopardy if He had created the human intellect with a such a defect that it could not in general rely upon past convictions, that the intellect did not 'tend towards truth'. (Of course, passing on to a new issue may mean proceeding to the next step of a demonstrative argument, like the one proving God's existence. Descartes has to assert, as he does for example in his reply to Arnauld's objection, that one can 'attend' to at least a simple argument as a whole. See also Descartes' peculiar account of the 'sweep of thought' in the seventh of the Rules for the Direction of the Mind (I, 25).)

7. Meditation 6

a. Review; and the 'Probable' Argument from Imagination

At this point in the Meditations, Descartes has obtained certainty about a variety of topics: his existence, his essence, the causal principle, God's existence, that God made him, that God is not a deceiver, that clarity and distinctness are indicators of truth, that he has a free will, the source of error, and that God is the source of confidence in elaborate proofs. Descartes sets two aims in Meditation 6: first, to show the existence of material objects, and, second, to show that mind is distinct from body.
Recalling the distinction made earlier between primary objects of perception (objects of mathematics) and secondary objects of perception (apparent objects formed from observer-dependent sensory properties), Descartes investigates whether material objects exist by asking two questions: (1) do primary objects exist? and (2) do secondary objects exist? In answering the first question, Descartes draws on a distinction between imagining primary objects and conceiving of primary objects. He notes that he conceives of primary objects (such as triangles) clearly and distinctly, but this in no way means that such objects actually exist. It only means that they might exist since the idea contains no contradiction. (See the discussion of possible existence in the treatment of Meditation 5 above.) In addition to conceiving of primary objects, though, Descartes says that he can imagine many primary objects as well. We can, for example, intellectually conceive of a chiliagon (a thousand sided figure) although we cannot imagine one (i.e., visually picture one in our minds). At best, we would imagine a sort of vaguely many-sided object. Moreover, the mental acts involved in conceiving and in imagining are recognisably different kinds of mental effort. These analyses show, Descartes claims, that conceiving and imagining are fundamentally different. This leads him to a further claim: that, while conception is a necessary attribute of humans, imagining is not. Lacking imagination, I would still be 'me' as a thinking entity. Thus, Descartes reasons, the imagination seems to have something to do with my body which, since I can even doubt its existence, is also not an essential part of me and is obviously bound up with the kind of things (extended and material objects) the imagination represents. In imagination, he writes, the mind 'turns towards the body' (II, 51). However, it would follow from this that if the mind can imagine, then there must exist body. Descartes believes this line of reasoning is only probable, however, since he cannot rule out another (as yet unthought of) way of explaining the nature of imagining. Since we can conceive of primary objects, then such objects possibly exist. Since we can also imagine these objects, then such objects probably exist, yet we cannot say for sure whether they do exist.

Failing to attain certainty about the existence of primary external objects, Descartes turns his attention to secondary external objects. (Of course, we know from our previous discussions of the primary/secondary quality distinction in Descartes that we are doomed from the start in trying to show that secondary objects exist.) Since his notion of secondary objects rests on his faculty of secondary perception (which still might only be an illusion) he needs to explore this faculty. He does this by giving a summary of the first three Meditations, noting what conclusions he has already arrived at about secondary perception. He recalls first that he had a naive confidence in his senses (secondary perception) by which he perceived the different parts of his body, different emotional and physiological appetites, and various secondary qualities in objects such as heat and color. He next recalls how he gradually lost all confidence in the reliability of these secondary perceptions. There were three steps to this doubting process. First, we are misguided by optical illusions. Second, our perceptions may be dream states, and, third, God (or some other being with the requisite powers) might be deceiving us. He recalls that external sensations seem to arise from a source outside of himself, since such sensations don't depend on his will. However, he might have a faculty that is the source of seemingly external sensations and not know it.

b. On the Distinction Between Mind and Body

Descartes is now ready to present his argument demonstrating the existence of bodies and the external world in general. The first part of the argument occupies only a paragraph in Meditation 6, but is considerably expanded upon in the Principles of Philosophy. It is intended to demonstrate that mind and body are really distinct substances.

Descartes recalls how he attained certainty that God would not deceive him about his clear and distinct ideas. One such idea concerns his identity as a thinking thing, and the hypothesis that thinking is his only
essential attribute. This issue first surfaces at the 'I think, I am' stage of Descartes' thought (e.g. Meditation 2). Recall Descartes' argument that whatever doubt I may be able to maintain, I cannot doubt that I am doubting - that I exist as doubting and, in general, thinking. Descartes then asks 'who' is this thinking thing. That is to say, what is essential to it - as opposed to a property that it happens to have, but doesn't need to have. As we saw, he moves towards a conception of himself as essentially a thinking thing, that is his whole being. However, he then writes,

... [M]ay it not perhaps be the case that these very things which I am supposing to be nothing, because they are unknown to me, are in reality identical with the 'I' of which I am aware? (Meditation 2, II 18)

The only property I know that I have is thinking. But in Meditation 6, he states more strongly that thinking is the only quality that the soul possesses. The former is an epistemological claim, and the latter is an ontological claim. With respect to this point in the Discourse, Descartes' critics pointed out that the second claim cannot be inferred from the first. Thus his care here; and additional argument will be forthcoming in Meditation 6. (In the 'Preface' to the Meditations, he implicitly claims that his intention in the Discourse, was to merely make the epistemological claim (II, 7).)

So, then, is thinking the sole essential property of me - or rather might the body have the property of thought, or thinking the property of extension? (Note that it is in their answers to this issue that Spinoza differs most famously from Descartes.) Descartes is not yet in a position to be able to decide this issue with absolute certainty. Descartes can, however, demonstrate that the one property that is essential to all 'external' objects is extension: that is, that they have size, shape and motion. All other properties - colour, smell, even weight - all can be peeled away as inessential, leaving only extension (See Principles, part 2, §4, 1, 224.). We should make two observations here: First, this move by Descartes has extraordinarily important consequences for physics. It means that all of the secondary qualities are to be traced back to, and effectively reduced to, primary qualities. Physics has only one real quality to worry about: extension, broadly speaking (Principles, part two, §23, I 232-3). Moreover, extension can be exhaustively understood in mathematical terms. Therefore, the whole of the physical world is essentially mathematical in character. This is a titanic jump from Aristotle, and places Descartes along with Galileo as one of the early founders of modern physics.

Second, it is important to see this type of analysis as a basic part of Descartes' method. The central idea is that a clear and distinct conception allows one to grasp a thing's properties as either essential or accidental (non-essential). This ability follows from distinctness - for, remember, distinctness is defined as being able to fully describe the differences between one thing and any other.

An accidental property is one that does not indicate a real distinction between substances. For example, if I had a clear and distinct idea of Camelus bactrianus as a species, then I would know that its distinction from Camelus dromedarius, is not that it has a sore left front leg, or that its name is Ginger. These are only distinctions between particular individuals, and are entirely contingent with respect to the distinction between species. Instead, I would know that the real distinction is that the former has two humps rather than one. The problem with this kind of analysis - or one problem at any rate - is that what is essential to my idea of something may not be essential to the thing the idea is of. Descartes is analysing the properties of our ideas. These ideas, as we have seen, have a certain objective reality - they claim to be representations of things. But whether they are or not - and even if they are, whether they are accurate representations of things - remains to be decided. So, Descartes asks, is it obvious, from the fact that my clear and distinct conception of mind has the sole attribute of thinking and that my clear and distinct conception of body has the sole attribute of extension, that mind and body are separate substances? No, Descartes states, it is not. The first reservation being that while thinking is certainly one property of mind it may not be its unique essence, and similarly with body and extension. And secondly, perhaps, these attributes are the one and the same: they may only be different modes of each other. Thus the problem in
the quotation above.

What we are asking for, essentially, is 'what kind of distinction is the distinction between extension and thought?' Descartes says that there are three different types of distinctions (Principles, part one, §60-2, I, 213-5):

1. Real distinction (two genuinely different things);
2. Modal distinction (between a substance and a particular property of it - we can clearly and distinctly conceive of the former without the latter, but not the latter without the former. So, for example, the distinction between a substance and a particular shape or colour that it has; similarly, any distinction between two such properties is also a modal distinction);
3. Distinction of thought/ reason (between a substance and a property without which the substance can not be clearly and distinctly conceived: e.g. to separate duration or extension in general from material substance).

A defining (or, 'principal' (Principles, part one, §53, I, 210-1)) attribute is that attribute of a substance which distinguishes it from any other type of substance, and thus without which that substance could not be conceived. It is the defining or principal attribute that clear and distinct perception is supposed to ascertain. Every substance has only one defining attribute. It may have other 'common' attributes too - e.g. existence, duration, etc. - but these do not distinguish one substance from another (see Principles, part one, §62, I, 214-5). Suppose a substance A had more than one defining attribute. It would be possible for there to be a substance B that had just one of these attributes. In that case, the real distinction between A and B would turn on only one defining attribute, contradicting the supposition. (But does this guarantee that for every substance there is only one distinction of thought? That is, that there is only one property without which the substance cannot be clearly and distinctly thought?) Descartes argues, as we have seen, that material substance has the defining attribute 'extension'. Mental substance has the defining attribute 'thought'.

Then - again, as we have seen - the problem of the divine author of our Being enters the equation. Descartes writes, at the end of Meditations 4,

... [B]ecause every clear and distinct conception is undoubtedly something, and hence cannot come from nothing, but must necessarily have God for its author. Its author, I say, is God, who is supremely perfect, and who cannot be a deceiver on pain of contradiction; hence the perception [or judgement] is undoubtedly true. (Meditation 4, II, 43)

The existence of God gives general validity to the 'clear and distinct' test; that is, we can now claim that that which is clearly and distinctly true once will always be true, will be maintained in its truth. (Recall this is Descartes' reply to the charge of circular argumentation.) But more importantly here, anything that is clearly and distinctly conceived must be considered possible - that is, God could produce it, if He so chose. What that means here is that anything which is clearly and distinctly seen to be separable from something else, must be so in fact (a fertile proposition that one can even find in Hume). For God certainly has the power to separate any two such things without essentially altering them. For something to not be its own essence is a contradiction, and everything is possible for God except contradictions - although clearly He can make any substance exist or not exist, or create something with a different essence. This allows Descartes to make the following argument:

1. I have a clear and distinct idea of material substance, the essential or defining attribute of which is extension.
2. Therefore, it is at least possible that material substances exist.
3. I have a clear and distinct idea of mental substance, the essential or defining attribute of which is thought.
4. Therefore, it is a least possible that mental substances exist.
5. To say that two things are not really distinct means to say that it is impossible that they could exist separately.
6. Matter and mind can possibly exist separately, therefore they must be really distinct.
7. 'And although we suppose that God united a body to a soul so closely that it was impossible to form a more intimate union, and thus made a composite whole, the two substances would remain really distinct, notwithstanding this union' (Principles of Philosophy, part one, §60, I, 213).

In the Dedication to the Meditations, Descartes argues that one of the two main objectives of the book is to prove the immortality of the soul. Interestingly, Descartes scarcely addresses this issue in the Meditations. Therein, his most complete discussion of the subject appears in the 'Synopsis' to Meditation 2, along with his reasons for not pursuing the topic further in the book itself (II, 9-10). He begins his discussion by describing when the issue of immortality should be addressed in the order of his investigation. One factor in establishing the immortality of the soul is showing that the soul is composed of an indestructible and unalterable substance. Although the material substance of the human body is in general indestructible, the composition of the body is alterable. Thus, the body as such is not eternal. The spiritual substance of the human mind in general is also indestructible. Of course, our minds also change when we have different perceptions. Using Aristotle's terminology, these changes are accidental, though, and not essential. In a letter to Mersenne dated December 24th, 1640 (III, 163), Descartes distinguishes between showing the absolute 'immortality' of the soul (an impossible demonstration, Descartes says, for he there takes this to mean that God cannot destroy it) and the simple fact that the soul's existence is different from the body's. What is important about this is that Descartes clearly feels enough has been said simply in saying that the soul is ontologically distinct from the body, and is therefore not subject to alteration and death in the same way. Clearly, the argument is not considerably different from Plato's in the Phaedo.

c. The Existence of Extended Bodies; Space

Let us return to the reconstruction of Descartes' argument for the real existence of extended things. So far we have only shown that extension is indeed the principal quality of matter, and that mind and extended matter are different substances. Descartes continues by explaining that we are designed with several mental faculties which are responsible for various ways of thinking. He is most concerned here with the passive faculty of perception, that is, the ability of receiving and recognizing the ideas of sensible things. But we can only perceive what is in some sense given actively, that is, from some source or cause. This implies that there is an active source of these ideas, either inside or outside of him. That is, if I passively (or non-wilfully) perceive a rock in front of me, then there is some active source feeding me that perception. Descartes sees only three possible explanations of that active source: the perceptions are actively produced by either himself, God (or the malicious demon, though this has already been ruled out), or external objects. He eliminates the first two options and concludes that external objects are the active source of such perceptions. The argument runs as follows:

1. I know clearly and distinctly that there is in me a passive faculty which receives perceptions from an active source
2. This active source of perception is either me, God, or external objects
3. I am not that active source since such perceptions are not willfully produced and does not involve thinking (my true essence). (Relatedly, in the last paragraph of Meditation 6 (II, 61-2), Descartes also eliminates the Mediation 1 argument about dreaming: When we are
awake, our memories unite the events of our lives; when we are dreaming, memory cannot connect our dreams together. The fact that our memory does not contradict itself - as it would if we were previously awake and now dreaming, or vice versa - is proof that the dream argument does not really permit scepticism. It is probable that this argument is intended to follow from the consideration of error and of the criteria of clarity and distinctness found in Meditations 4 and 5.)

4. God does not implant ideas of perception in me since this would be deception.

5. Therefore, external objects are the active source of perceptions.

For Descartes, (4) above is the crucial premise to his argument. Why does he believe that perceptions are not implanted in him by God? The answer is that, first, Descartes has no faculty by which he could know if such perceptions are implanted by God. Second, he has a strong inclination to believe that secondary perceptions are the result of secondary external objects. Third, Descartes argues that it would be deception on God's part if God (a) permitted Descartes to erroneously believe perceptions are caused by objects and (b) did not give him a faculty to know that such notions are actually caused by God. This parallels the distinction between commissive and omissive deception which we discussed in the section on Meditation 4.

In summary, Descartes argues that humans are spirits that occupy a mechanical body, made of extended substance, and that the essential attributes of humans are exclusively attributes of the spirit (such as thinking, willing and conceiving) which do not involve the body at all. Attributes, such as sense perception, movement, and appetite require a body, are attributes of our body and not of our spirit and, hence, do not comprise our essence. The set of arguments just considered prove two important things that Descartes has been after for some time: first, that mind and body are genuinely distinct substances; second, that we can have indubitable confidence that extended bodies do exist.

Extended bodies suggests the concept of space in general, although Descartes did not give the subject prominence in the Meditations. But Descartes' views, and others similar or opposing, became one of the 'hot' topics in philosophy throughout the Seventeenth and Eighteenth Centuries. In Principles, part two, §8-12 (I, 226-8), Descartes gives the following argument:

1. The quantity of a thing is only different in thought to a thing of a particular quantity. For example, the 'one-pintness' (the property of having the quantity 'one pint') of the pint of beer is not really distinct from my pint. It is a modal distinction. More generally, the 'having a quantity-ness' (the property of having a quantity at all) of any object like the pint is also not really distinct, but now is not a modal distinction, but only a distinction in thought.

2. Having a particular quantity is the nature of individual bodies. Every individual thing, that is, will have a set of particular quantities (volume, mass, temperature, etc.) at a particular point in time, that are part and parcel of what we mean in saying that it is an individual thing.

3. By 'space' we mean quantity of extension (§11).

4. Space is only different in thought from individual extended things.

5. Moreover, by 'extension' or 'space' in general, we mean either the particular quantity of extension that is shared by many things (§12), or else simply the fact that every physical substance must have extension, which is just the defining attribute of such substance.

6. Thus, space, in particular or in general, is nothing beyond or other than the particular quantity of extension of things or the general feature of things that they necessarily have extension. Space, as such, does not exist.

This argument itself has a long history, going back to Aristotle. The difficulty was always the apparent impossibility of thinking of space as itself a kind of thing, separable both from particular things, and from us as observers of it. A similar issue was the subject of a famous debate between Leibniz and Clarke (a follower of Newton) at the beginning of the 18th Century; moreover, just this issue was terribly important...
in the genesis of Kant's groundbreaking new philosophy at the end of the 18th Century. (Please see the entries on Leibniz and Kant in this encyclopaedia.)

One of the immediate consequences of Descartes' account of space is that, strictly speaking, a vacuum cannot exist (Principles, part two, §17-19, I, 230). Another, is that space, considered now as the totality of extended substance, is extended without limit - the universe is infinite (ibid, §21, I, 232). Finally, Descartes argues that his analysis of space means that there cannot be a plurality of worlds or spheres, such as were typically posited in the Greek and Medieval periods (ibid. §22, I, 232). Thus, the physics that pertains on Earth also pertains everywhere else; the physics that pertains to the present is the same as in the past, or future. A Galileo or a Newton can study the motions of the stars and planets, with complete confidence, from their parlours.

d. The Relation Between Mind and Body; Innate Ideas; Interaction

We must be careful when thinking about Descartes' famous dualism of mind and body; that is, the thesis that mind and body are different, and thus ideally separable, substances. In the Latin text of the Meditations, Descartes uses different words for body in the general sense of extended entities, and for body in the specific sense of his own (or any human's) arms, legs and torso. Descartes argues that a distinct idea of my own mind does not include the ideas of imagination, sensation, purposeful movement of body, appetites or most emotions (Principles, part one, §48, I, 208-9). That is, had I none of these things, I would continue to be the same self, although in a much impoverished manner, and could still think (and that alone is my essence) in other ways. All of the above involve some relation to the body.

But the reverse is not true: it is impossible to think of imagination or sensation or purposeful movement without a mind. That is to say, the former are of the body, but not merely of the body. Descartes writes, 'In imagining, it [the mind] turns towards the body' (Meditations 6, II, 51). These things are distinct from mind as possible modes are from a thing (e.g. as a cuboid shape is from a body). On the other hand, mind cannot be thought without it thinking, at least in the sense of pure thought - therefore thinking in the non-bodily sense of 'pure' intellection (see Principles, part one, §32, I, 204) is an essential mode. This distinction between merely possible and essential modes provides an argument for the separability of pure mind from things of the body. But, again, 'separability' does not mean 'separate' - the immediate and almost overwhelming fact of our existence is the factual togetherness of mind and body.

Nevertheless, that which in the body produces sensations (i.e. the nervous system and the organs of sense) is not even a possible mode of mind, for we can think of it separately from mind. And similarly with all other features of body and world. Rather than modes of mind, they must be modes of a completely separate material substance, defined essentially in terms of extension. Thus, the whole visible world is 'as if it were a machine in which there was nothing at all to consider except the figures and motions of its parts' (Principles, part four, §188, I, 279). There, Descartes is speaking of cosmology, signalling a change to come in the discussion of bodily sensation. And yet he continues to apply this metaphor in the sections that follow, in the discussion of the 'motions' of 'nerves'. Thus, although experienced sensation is not to be understood through body alone, the body considered on its own is the object of a physical science (physiology).

However, our body as that which has purposeful movement (body as that which belongs to me as a conjoined being) is not merely such a machine. The soul is not a 'ghost in the machine' for Descartes, as anti-Cartesians have sometimes alleged. Rather, from the point of view of the self, the presence of the soul 'animates' the whole body, making it different from other matter. Thus, the body is a different kind of entity considered objectively from when it is considered as mine. The mind and body are 'separable' in
principle, but are in fact in a 'close and intimate union' (*Principles,* part one, §48, I, 208-9). So intimately, in fact, that huge parts of our everyday mental life are dependent upon the body (indeed, as we have seen, Descartes uses the mere existence of the imagination as a 'probable' proof for the existence of an external world at the beginning of Meditations 6). So intimately, in addition, that the body has to be considered a different kind of extended entity from the point of view of the self. That is to say, the ideas we have of the body and mind in union are different from, and irreducible to, the ideas we have of either extended matter, or of thinking substance. ('Correspondence with Elisabeth', letter of May 21st, 1643 and again on June 28th; respectively: III, 217ff; III, 226ff)

Descartes' understanding of human bodies contrasts with his account of animals. Descartes believed that, on earth, only humans have a dual spirit/body nature. Non-human animals have only bodies and are essentially automata or biological robots which behave according to their internal biological/mechanical makeup. Thus, they do not think, even though they behave in ways which we might mistakenly take to indicate conscious thought. Descartes' view was patently rejected by many of his contemporaries. In his article on Rorarius in the *Historical and Critical Dictionary* (1692), Bayle presents a long list of criticisms against Descartes' theory. Even today Descartes' view is the object of ridicule by animal rights advocates. Descartes' reasoning is presented in two letters to Henry More (III, 365-6, 374). He argues that there are two sources of motion in organisms. The first is mechanical and bodily and involves the physiological mechanism of animal spirits. The second is mind or soul which is incorporeal. Descartes believes that the mental cause of motion does not apply to animals, and that all of their behavior can be explained by mechanical and bodily events. The common reason for holding that animals think is that they have sensory organs like humans. However, Descartes offers several reasons for not ascribing thinking to animals. First, we acknowledge that lower animals (such as bugs) move only by mechanics. Recognizing this makes it easier to see why this is so of higher animals as well. Second, our own human bodies move without thought, such as when we are in convulsions. Third, we can create machines which move. His main argument, though, is that animals have no true language. Interestingly, Descartes claims that he is not denying life or sensation to animals, but only thought:

> Please note that I am speaking of thought, and not of life or sensation. I do not deny life to animals, since I regard it as consisting simply in the heat of the heart; and I do not even deny sensation, in so far as it depends upon a bodily organ. Thus my opinion is not so much cruel to animals as indulgent to human beings - at least to those who are not given to the superstitions of Pythagoras - since it absolves them from the suspicion of crime when they eat or kill animals. (III, 366)

One of the famous consequences of Cartesian dualism is the necessity of positing innate ideas. In accordance with the wax argument found at the end of Meditation 2: if exterior objects are knowable with any clarity at all - and they are, at least insofar as they are objects of the science of geometry - then there must be innate ideas. Such ideas come not from the senses or the imagination, but from the operation of the mind alone. Only such ideas have the features of necessity or universality which are marks of such a science; experiential ideas are, rather, contingent. Furthermore, ideas do not resemble the objects they claim to represent. Because of this, we know that mind is essentially a thinking substance and body essentially an extended substance; that is, are essentially different. Therefore, no idea of extension can be formed in the mind by the senses. It follows that for there to be any thought at all of extended substance, the idea of extension must be innate - it must, that is, belong originally to the mind. Similarly for all fundamental concepts concerning the nature of things essentially different from pure thought, but also all non-particular concepts (such as colour)! ('Comments on a Certain Broadsheet', I, 303). Sense experiences - the affection of the mind by the brain and ultimately by the body - are 'occasions' that stimulate the explicit arising and positing of the innate idea as here or there applying to the world (ibid.). The world 'impresses' itself upon our nervous system, but the nervous system does not 'impress' itself upon the mind - rather, it stimulates the mind to exhibit an idea of which it was already capable. Thus, Descartes insists that the innate ideas are not separate from the faculty of thinking of the mind. In the same sense, he
writes, 'we say that generosity is 'innate' in certain families' (I, 304). This stimulation by the occasion of experiences is essential, for ideas are innate not 'actually', but potentially in the mind, as dispositions, in so far as we might say the mind has innately not the idea so much as the capacity to think the idea (I, 305).

This dualism presents a problem for Descartes insofar as an explanation is needed as to how our minds and bodies interact in their separate realms. For example, when my hand touches something hot, this sensation is registered in my mind. Also, if my mind decides to remove my hand, this decision must be transferred to my body, which results in motor activity. Thus, Descartes needs an explanation of both sensory and motor communication between our spirit minds and physical bodies. Unfortunately, the problem of the interaction between mind and body is not solved just by their close 'union'. For they are still essentially different kinds of things.

He offers such an explanation in Part One of The Passions of the Soul (1649): the pineal gland in the brain is the gateway between the two realms (I, 340ff). He notes that there are two standard accounts of how the body and soul are connected: through the heart, and through the whole brain. He rejects these and suggests that the point of interaction is the pineal gland. This is because it is a single gland in the center of the brain, which unites our doubled sensory perceptions (e.g. two eyes). With sensory perception, information is transferred to the pineal gland through animal spirits, blood, and nerves. With motor commands, the gland is moved by the soul, and thrusts the animal spirits towards the pores of the brain, and onto the nerves.

Problems of the type that Descartes has backed himself into here go by the name of the 'third man problem'. The reference is to Aristotle, but actually Plato first uses similar arguments in his strange dialogue Parmenides. Expressed in Platonic terms, the argument runs as follows: Suppose that to explain why a group of individuals are collectively called 'men', we posit the existence of the 'Form' of man. Then, however, we have a new collective (the original group plus the Form) needing a second Form that gives the identity of that collective. And so on. This infinite regress is assumed a reductio ad absurdum of the original supposition of the existence of Forms. In Descartes' case, the problem is analogous. The problem is to understand how mind and body interact. Suppose we explain the interaction by positing the existence of a third thing that is 'between' mind and body. But then, we have three things among which we must understand the interaction (how does mind interact with this third thing? how does body?). We have to posit still further intermediaries, and so on ad infinitum. Descartes' idea of the pineal gland as the site of interaction must on principle fall to the same general problem. Thus, his hypothesis is often taken as one of the most ludicrous moments in the history of philosophy. However, to be fair, Descartes was probably using the pineal gland as just the site (in the body) of interaction, not as an explanation. In the same way, one might say that the church is the site of the interrelation between humans and God - without that being an explanation of how that interrelation happens. Moreover, Descartes himself also put forward several more intriguing alternatives to the pineal gland as site. See in particular the analogy with gravity where Descartes speaks of 'the whole of' mind in 'any one' of the parts of the body (Sixth Replies, II, 298).

In fact, of course, Descartes was fully aware of the third man problem. In the 'Correspondence with Elisabeth' as we have already noted, he asserts that the fundamental notions by which we think the union of mind and body are essentially different from the notions we have of mind or body separately. There, he calls these 'primitive notions.' To say that these are primitive or primary, also means that one will be unable to explain any such idea on the basis of any of the others. Now, we know that extension is a primitive notion (all other properties of the material world are reducible to it, and it itself is really distinct from mind). Also and similarly, we know that thought is a primitive notion. You cannot reduce thought to extension or extension to thought. In that set of 'Correspondence', Descartes' gives two arguments for the idea of union also being primitive. First: 'It does not seem to me that the human mind is capable of forming a very distinct conception of both the distinction between the soul and the body and their union' (III, 227) because it involves a self-contradiction. Second, is that the interaction is known first and
foremost by the senses, 'That is why people who never philosophise and use only their senses have no
doubt that the soul moves the body, and that the body acts on the soul' (III, 227). But sense perception in
the full sense, as we saw above, is precisely a product of the union itself - and therefore the primitive
notion of interaction it provides us is essentially unavailable to pure thought, that is, to philosophy. It
follows that, despite the fact that this union makes perfect sense to ordinary experience, philosophy will
never be able to grasp this union or interaction.

e. The Validity of Sense Perception

Even though Descartes is now confident that such perceptions result from external objects, he still has
reservations about the reliability of sense perception. Descartes addresses the issue by looking at the
somewhat ambiguous manner in which 'nature' teaches him about external objects. In the most general
sense, natural teachings are any dispositions implanted in us by God. In its more particular sense, natural
teachings are the complexus of all things that God has given me. He explains that some things nature
teaches us are true and important (although obviously, from a philosophical point of view, requiring
independent verification). The three important truths which nature teaches us are (1) I have a body in need
of food, (2) mind and body are connected, and (3) there are external bodies or objects. These truths of
nature all hinge on the fact that we are composed of both a mind and body. Descartes continues that
although some things nature teaches are true, other natural teachings may be false. Four such things are
(1) unperceived space is a vacuum, (2) the idea of heat resembles some external state of affairs, (3)
perceived colors resemble external colors, and (4) bitter tastes resemble external things.

Descartes now has a problem: some things nature teaches us are true, yet some things nature teaches us
may be false. His solution is to distinguish between the various ways that nature can teach us something.
As noted, all natural teachings are dispositions given to us by God. One subset of natural teachings
pertain only to the mind, and these are clear and distinct. The subject matter of such teachings involves
purely mental concepts, such as 'what is done cannot be undone.' When nature teaches us in this manner,
there is no question about the truth of the matter. A second subset of natural teachings pertains only to the
body. Descartes does not deal with these. Yet a third subset pertains to the relation between our minds and
bodies. These truths are a little more obscure and can be misinterpreted. All of the natural teachings noted
above are of this mind/body type. The false ones, then, are simply misinterpretations. He examines more
carefully the above apparent natural teachings, which are false, and explains what is really going on. For
example, with pain that is caused from heat, it is true that something in heat excites pain, but I can't say
that something resembling pain resides in heat. He believes that the ultimate source of error here is that
we have conflicting signals about what we should pursue or avoid.

Descartes anticipates a criticism that compares a sick person who improperly perceives things to a poorly
designed clock which gives the wrong time. God, thus, would be at fault for poorly designing humans. He
dismisses this line of reasoning, though, since it imposes an artificial order on the body by forcing a
comparison with clocks. Descartes argues that there are four sources of error that are inherently tied to the
structure of our physical bodies. The first of these stems from the fact that the mind and body are distinct
and, in particular, the mind is unified and the body is divisible. The second results from the fact that the
mind does not receive impressions directly from all parts of the body. The third arises from the fact that
there are long nerves going to and from the brain. If we poke one of these at any place, we will have the
same sensation. Finally, some bodily feelings are deceptive insofar as they give us exaggerated or
misdirected sensations. These, though, are present for the benefit of self-preservation. From these four
reasons, Descartes concludes that the construction of our bodies subject us to error, while at the same time
helping to preserve the body. However, he believes that we can counteract this problem and ultimately
have confidence in our bodily perceptions. First, Descartes notes that bodily errors are not haphazard, but have a kind of mechanical logic. As such, they can be disentangled when we have arrived at a proper understanding of mind and body. He also concedes that our bodies often mislead us when we are sick. However, this is better than the alternative possibility that we think we are well when we are in fact sick. Finally, our memory has us connect the present to the past, giving us the opportunity to correct present judgements where they contradict the rationally arrived at system of judgements formed in the past. Thus, we can counter the misleading effects of bodily perceptions and can ultimately rely on our senses.

It is worth pointing out that, although it seems as though the *Meditations* just drifts to its end, with miscellaneous discussions of scepticism, in fact Descartes is very cleverly going full circle. He is, as it were, erasing the necessity (and even the possibility) of having to go through this philosophical process again. For the sceptical arguments that open the *Meditations*, and set it in motion, are rendered 'laughable' by the last few paragraphs of the book. There is no need to begin again: a firm foundation, not only for the rational part of religion but also for science, has been uncovered.

**8. Suggestions for Further Reading**

All the references in the above are to the three volume *The Philosophical Writings of Descartes*, translated by Cottingham, Stoothoff, Murdoch and Kenny, Cambridge UP, 1991. References are given by volume number (in Roman numerals, followed by the page number). We have also tried to give a sufficient description of the source so that other editions can be used. One recent volume, with an excellent selection of Descartes' work is *Philosophical Essays and Correspondence*, ed. Ariew, various translators, Indianapolis: Hackett, 2000. The standard original language edition is *Oeuvres de Descartes*, ed. Adam and Tannery, Paris: Vrin, 1974. The following is a brief list of widely available secondary texts.


Author Information:

Douglas Burnham  
Email: h.d.burnham@staffs.ac.uk

James Fieser  
Email: jfieser@utm.edu

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