Descartes’ Proof of the Existence of Matter

Desmond M. Clarke

Toward the end of 1639, when he was forty-three years old, Descartes began to write what he tentatively called a “discourse,” in which he planned to develop systematically some of the thoughts about metaphysics that he had drafted ten years previously. This essay appeared two years later as the *Meditations on First Philosophy* (1641). However, this was not the first time that Descartes revealed some of his metaphysical ideas in print. The *Discourse on Method*, published in French in 1637, included a synoptic version of his arguments about God and the human soul (which is what Descartes meant by the term “metaphysics”). On further reflection in 1639, he thought it would be advisable to publish a more extended version of the same arguments in Latin, and thereby to contribute to the apologetic aims of the Catholic Church in defense of its religious dogmas. While the precise reasons for his public venture into metaphysics at this stage in his intellectual life remain unclear, it is beyond doubt that he had thought about God and the human soul during the years 1629–39 and that he was now returning to these themes to set out his ideas in a more systematic and complete manner. Besides, the choice of Latin would make his view accessible to university students throughout Europe.

It is equally beyond dispute that, up to this point, Descartes had never doubted the existence of the material world and he was not about to begin having such doubts in 1639. His attitude to skeptical arguments about the existence of the physical world is well expressed in the final paragraph of Meditation VI, where he refers to “the hyperbolic doubts of recent days [which] should be rejected as ridiculous” (AT vii, 89). Despite this clear statement, many of his first readers were so impressed by the Cartesian statement of contemporary skeptical objections in Meditation I (as are many readers since) that the impact of those objections lasted much longer than Descartes’ qualified success in refuting them.

The unhappy author complained of this misunderstanding of his project, as he did of many others. For example, he had attempted as best he could to prove
God’s existence and was rewarded for his efforts by being accused by Calvinist theologians of atheism. Likewise, he constructed the best arguments he could think of against the pervasive skeptical opinions of his age, and was rewarded by being described as a skeptic, by philosophers and theologians. His complaint is understandable, even if his readers’ reactions are not completely unfounded either. There were signs of exasperation in his complaint to Father Dinet, when he implored him to restrain the unjustified criticism of Father Bourdin, whom he took to be a particularly unsophisticated Jesuit. He pointed out that when the most authoritative among ancient authors on medical matters, Galen, discussed the causes of disease, no one thought it reasonable to accuse him of telling people how to get sick. In exactly the same way, Descartes claims, “I did not propose any reasons for doubt with the intention of teaching them but, on the contrary, in order to refute them” (AT vii, 573–4).

Thus, Descartes was neither personally tempted by skepticism about the existence of matter, nor was he philosophically persuaded of the plausibility of arguments in favor of such skepticism. In fact, all his work during the years prior to 1639 assumed as obvious that the physical world does exist and that it can be observed, manipulated, investigated and, with appropriate guidance, explained. During these years, while he was living in the United Provinces, Descartes seems to have devoted almost all his time to writing the book that was intended as a summary of everything he had discovered to date about the universe, and which was called appropriately *The World*. However, the condemnation of Galileo in 1633, just when *The World* in draft form was ready to be shown to friends, caused an abrupt change of plan. It was withheld even from Descartes’ most supportive friends, such as his dedicated correspondent in Paris, Marin Mersenne, or the Dutch politician and man of letters, Constantijn Huygens. Many sympathetic readers subsequently asked Descartes to release for publication the general theory that provided a foundation for all his physics and physiology. Their requests fell on deaf ears. He refused even to let them read *The World* unofficially. However, this act of self-censorship did not represent a change of mind on his part about the contents of *The World*. Descartes released some of its theories in the scientific essays that were published in 1637, and he used it again to write the *Principles of Philosophy* (1644), while continuing to hold to his decision not to publish *The World* in its original format. In fact, it remained unpublished throughout his life, and appeared posthumously only in 1664.

*The World* or, at least, that version of it that was edited by Descartes’ literary executor after his death, contains his theory of matter and the first version of the three laws of nature that appeared subsequently in the *Principles* (Part II). If one wishes to know, therefore, what he was claiming about matter in the *Meditations*, or why he was arguing as he was, one has to look first to *The World*, an unfinished book that he treasured throughout the final two decades of his life and to which he frequently refers as his “physics.”
Matter in *The World*

We know things by their properties. This apparently obvious fact camouflages a philosophical problem that became prominent after Galileo and remained central to philosophical discussions throughout the seventeenth century. That problem was: how do we distinguish between the apparent and the real properties of things, between how things appear to us and how they actually are in reality? We might assume, of course, that things have all the properties that they appear to have, or that there are objective features in every reality that correspond exactly to the way in which we experience them. The example used by Galileo to cast doubt on this assumption, and which was re-used by Descartes to the same effect, was the sensation we experience when we are tickled. If someone passes a feather lightly over any sensitive part of our body, we have a characteristic tickling sensation which is easy to recognize but very difficult to describe. Without trying to describe its qualitative feel, we denote it with a word that implies an appropriate external cause; if we have the sensation in the absence of a familiar external cause, we usually have reason to worry about our health.

However, no one is so naïve as to assume that there is some property, in feathers for example, that corresponds exactly to this tickling sensation. We assume, rather, that the effect of the feather lightly touching our skin somehow causes a definite, recognizable perception, which does not literally resemble anything in the feather or its motion. If we move from ticking sensations to our experience of light, colors, and so on, and if we ask what are the objective properties of light which cause us to have the sensations that we have, Descartes draws the plausible conclusion that is suggested by the tickling example. “Now I see nothing which compels us to believe that what it is in objects that gives rise to the sensation of light is any more like that sensation than the actions of a feather . . . are like a sensation of tickling . . .” (AT xi, 6).

Thus we know things by their properties, but we rarely if ever know those properties directly or immediately. We seem instead to know how things appear to us, and we have to infer, somehow, from appearances to reality. This involves an inference to the best explanation. We postulate that things have as many properties as are necessary to explain all the properties that they seem to have. In this exercise, we are expected to observe the restrictions of parsimony and not to postulate more properties than are required. Necessity is the key factor here; the fewer properties we attribute to things the better.

This is a very brief outline of the first step in Descartes’ construction of a general physical theory in *The World*. He abandoned many of the properties that scholastic philosophers had assumed in matter – for example, that matter had a distinct property of heaviness – and he agreed to postulate only as many properties as seemed to him necessary to complete the project of explaining all the natural phenomena of the universe. Descartes was not renowned for his intellectual
modesty. Accordingly, he failed to notice that the ambitiousness of his plan could not be realized with the extremely parsimonious conceptual restrictions within which he worked. So he accepted that matter was uniform throughout the universe, that it was divided into parts of various sizes (he thought three sizes were enough), and that its parts moved in various ways and collided with each other. That meant that he needed to add laws of motion to explain (a) why pieces of matter move as they do and (b) what happens when they collide with each other in different circumstances. With these assumptions in place, Descartes set about the task of explaining all the natural phenomena that had been observed to date, including the action of light, the colors of the rainbow, the apparent attraction or repulsion of magnetic stones, the fact that bodies fall to the earth, and so on. At a macro-level, he planned to explain how the planets in the solar system were formed, why they move in their characteristic orbits, and why we should believe that the universe extends indefinitely into what appears to be empty space.

It is not surprising, in retrospect, that Descartes failed in this extremely ambitious project or, at least, that he failed to make as much progress with it as he had originally hoped. He allowed himself far too few properties in matter to explain many of the realities to which he turned his inquiring mind. During the two decades when he was listing the properties of matter, there was no understanding of electrical or chemical properties, and there was not even a vague intimation of atomic structure or a periodic table of elements. However, the reasons for Cartesian parsimony were not simply conceptual. It was not that he could not think or imagine other properties. Nor was his reluctance to postulate properties in matter simply a function of his lack of experimental data. Rather, Descartes’ niggardly attitude was inspired by a concept of explanation that was essentially correct.

Descartes did not think that we could explain any natural phenomenon by claiming that it was caused by something else that we understand even less well than what we are trying to explain. Nor could we hope to explain anything by inventing a fancy term, usually in Latin, that merely re-describes what we are trying to explain. For example, it is impossible to explain how things appear colored to us, when we look at them, by saying that they have a “capacity to appear colored,” just as we cannot explain why sleeping pills work by saying – equally uninformatively – that they have a “dormitive power.” Descartes thought he could understand reasonably well why moving bodies continue to move, and how they redistribute the force of their motion when they collide with other bodies. His ambition, then, was to explain all complex natural phenomena in terms of such readily intelligible, familiar realities, and to avoid the illusion of explaining things by merely re-describing them in novel, apparently technical terms.

Thus, the fundamental properties that were predicated of all pieces of matter included initially only their size, shape, their disposition in space or orientation, and the structures in which parts are related when combined into larger bodies. These properties were not unusually limited by the standards of the early seventeenth century. Even Robert Boyle, who made much more progress in developing
chemistry than Descartes had dreamed of, and who published the *Origin of Forms and Qualities* sixteen years after Descartes’ death, limited his description of matter to the following: “each of the primitive Fragments . . . must have two Attributes, its own Magnitude, or rather Size, and its own Figure or Shape” (Boyle 1999–2000: v, 307). He later adds “Posture” and “Order” (ibid., 316). Just as Boyle wrote about “these two grand and Catholick principles of bodies, Matter and Motion” (ibid., 307), Descartes also relied on matter and motion to explain all natural phenomena. One of the immediate problems that needed to be addressed, therefore, was the origin of motion and the ways in which it is distributed in the natural world.

Descartes relied on a familiar argument during the 1630s to distinguish between matter and motion. One could imagine a piece of matter that is not in motion, and therefore motion is not an intrinsic property of any particular piece of matter. It follows that it must be a distinct property, which may or may not be found in various pieces of matter. This suggested that motion is added to any given piece of matter from some external agency. If the whole of matter is considered in a similar way, motion must still be thought of as an added extra. Descartes also thought of the whole of matter together as a naturally indestructible substance. “Body, considered in general, is a substance and therefore can never perish” (AT vii, 14). Since God was assumed to have been the creator of matter, it was a simple step to attribute motion also to his creative agency. Once added to matter, motion had a similar ontological stability as matter, in the sense that it does not spontaneously self-destruct. Descartes assumed that, unless God were to annihilate matter or motion, matter would continue to exist indefinitely into the future and that the motion which was added by the creator would be constantly redistributed among its moving and non-moving parts. He clarified the latter point in a letter to Newcastle (March/April 1648): “I hold that there is a certain quantity of motion in the whole of created matter, which never increases or decreases. Thus when one body makes another body move, it loses as much of its own motion as it contributes to that of the other body” (AT v, 135). This holds even in cases where the change is imperceptible. For example, if a small stone falls to the ground and does not rebound, it must have shaken the whole earth when it lost its motion, even if the impact was not noticeable to human observers.

One could raise questions at this point about whether, in addition to being in motion or at rest, parts of matter include a distinct reality called a “force.” One plausible way of reading the texts is to assume that, for Descartes, force is reducible in some way to motion or rest, or to the tendencies of bodies in motion or at rest to remain in whatever condition they are in. This is addressed in the *Principles of Philosophy* (Part II), where Descartes defines motion as the transfer of a piece of matter from the vicinity of the bodies in its immediate environment to the vicinity of other bodies. He distinguished this simple reality – a transfer of location – from “the force or action which brings about the transfer, to show that motion is always in the moving body as opposed to the body which brings about
the movement” (AT viiiA, 54). He was very keen not to introduce, at this point, any mysterious entity as a possible explanation of bodily motions, such as a desire on the part of pieces of matter to move or to resist motion. He argued that traditional accounts of gravity make this mistake by attributing intentional states to pieces of matter or by imagining each piece of matter falling to the earth as if it were impelled by a soul. Once that mistake is avoided, however, he seems not to have objected to thinking of pieces of matter, either in motion or at rest, as having a property that results from the condition of motion or rest, namely, a force that could cause bodies to move or to resist motion.

The function of laws of nature, in this context, was to describe various ways in which bodies move as a result of being affected by other bodies which strike against them. The laws, therefore, describe the direction and speed of moving bodies as a result of different types of collision. Descartes offers three general principles of motion, which he describes as “laws of nature,” in Part II of the Principles, and seven more detailed descriptions of idealized collisions between parts of matter of varying sizes and speeds, which he describes as “rules.” These minimalist resources (if given in a more detailed form) exhaust the Cartesian description of matter.

**Extension as a Property of Matter**

The idea that matter might be understood in terms of a single defining property was probably inherited by Descartes from the scholastic tradition. Whatever its source, it appeared as a central feature of his thinking about the physical world as early as the unfinished essay that is now called the Rules (i.e. pre-1628), and it continued to dominate many of his discussions for the rest of his life.

There are two surprising features of Descartes’ discussion of matter and extension in the Rules: (a) that the analysis hinges on what can be imagined; and (b) the claim that if one tries to resolve the issue by recourse to concepts, one is likely to be misled by philosophical abstraction. Descartes defines “extension” in this context as “whatever has length, breadth and depth” (AT x, 442), and then warns against imagining a completely empty, extended space. “Someone may convince himself that it is not self-contradictory for extension per se to exist all on its own even if everything extended in the universe were annihilated” (AT x, 443). However, that would be a mistake, “an incorrect judgment of the intellect” if it ignored the help of the imagination. Descartes goes on to argue that “extension” and “body” denote the same reality. “We do not form two distinct ideas in our imagination, one of extension, the other of body, but just the single idea of an extended body” (AT x, 444).

These provisional conclusions, although never published during Descartes’ life, retained their validity for him throughout his career. They formed the basis of his argument, in the Principles, that space and body are one and the same reality, so that it makes no sense to try to imagine some limit to the universe. If we tried to
imagine a boundary for the physical universe, then the space beyond the boundary would have the same properties of extension as the body that it bounds. The theological implications of this argument were challenged by Queen Christina of Sweden, in questions sent to Descartes two years before he assumed his official duties as her philosopher in residence. Descartes defended his position by claiming that he shared this view with Cardinal de Cusa, and he set out his argument as simply as possible.

When I examine the nature of this matter, I find that it consists only in being extended in length, breadth and depth, so that everything that has these three dimensions is a part of this matter. There cannot therefore be a space which is completely empty, that is, which contains no matter, because we could not conceive of such a space unless we conceive these three dimensions in it and, therefore, some matter. For if one supposes that the world is finite, one imagines certain spaces beyond its boundaries which have their three dimensions and which, therefore, are not purely imaginary . . . but which contain matter. Since this matter cannot be anywhere other than in the world, it shows that the world extends beyond the boundaries that one wished to attribute to it. Since we have no reason to prove, and cannot even conceive, that the world has boundaries, I call it “indefinite.” (AT v, 52)

Similar considerations persuaded Descartes to oppose Pascal’s conclusions, in 1647–8, even after the famous experiment on the Puy-de-Dôme. Descartes agreed with Pascal, as did many others at the time, that a column of mercury is supported in a Torricelli tube not because nature abhors a vacuum but because the atmospheric air applies an equivalent pressure which is equal to the weight of the mercury column. However, he disagreed about how to describe the apparent vacuum at the top of the tube. Since this “vacuum” had dimensions and since it displayed other properties of a body, he argued that it must be a body of some kind rather than an absolutely empty space.

These considerations about the relationship between extension and matter constituted part of the standard Cartesian account of matter that not only predated the Meditations but continued to feature in all subsequent discussions of mind–body problems and discussions of the nature of space. It would have been very surprising if they disappeared suddenly from the Meditations and then re-appeared as suddenly in later writings, such as the Principles.

“Body” in the Meditations

In the course of developing arguments in the Meditations in support of the two objectives mentioned in the book’s subtitle – namely, to demonstrate “God’s existence and the distinction between the human soul and the body” – Descartes had occasion to talk about the essence of matter, and to offer a famous argument to support his belief in the existence of bodies. Since completing The World and
publishing the scientific essays of 1637, he had not had second thoughts about whether the physical world actually exists. He makes that clear in the Synopsis that forms a preface to the Meditations. Having referred to his efforts, in Meditation VI, to present all the arguments that enable the reader to conclude that material things exist, he adds:

The great benefit of these arguments is not, in my view, that they prove what they establish – namely, that there really is a world, and that human beings have bodies, and so on – since no sane person has every seriously doubted these things. The point is that in considering these arguments we come to realize that they are not as solid or as transparent as the arguments which lead us to knowledge of our own minds and of God. (AT vii, 15–16)

The specific objectives of this essay on metaphysics were to help readers to think coherently about the nature of the human mind and, by analogy, of God’s nature and existence. These are normally very difficult topics, and readers might have assumed that we are less certain about them than about familiar realities of everyday life. Descartes wanted to turn that assumption on its head. He wanted to argue that we are more certain about some features of our own thinking, and about the nature of the human mind, than we could ever possibly be about physical bodies.

If this argument were to work, however, it would not make doubtful our knowledge of the physical world or, at least, it would not make it any more doubtful than it was previously. The structure of the argument, in the Meditations, involves contrasting our knowledge of the physical world with the kind of direct, experiential knowledge of our own minds that Descartes claims to have, and then arguing that the latter is even more certain than the former. The two features of our knowledge of the physical world already mentioned above, namely, that we know the world through its properties, and we know it indirectly, are re-used here in the interests of the primary, polemical objectives of the Meditations.

Descartes includes “the essence of material things” as part of the title for Meditation V. His brief discussion is unsatisfactory. Part of the reason for this is that the structure of the argument in the Meditations prevents him, before Meditation VI, from discussing anything apart from his own ideas. Thus, rather than speculate about the properties of matter, he is confined in Meditation V to considering “the ideas of these things [i.e. bodies], in so far as they exist in my thought” (AT vii, 63). This review of ideas reveals that he can “distinctly imagine . . . the extension of a quantified thing in length, breadth, and depth” (AT vii, 63), and that he has many other ideas of the shape, number, or motion of parts of matter. Before developing these considerations further, however, Descartes reverts to a version of the ontological argument. In his objections, Pierre Gassendi questioned whether one could assume so readily, as scholastic philosophers did, that things have immutable essences and, by implication, that matter has an essence.
(AT vii, 318–19). Descartes’ reply is as unhelpful as Gassendi’s original objection was deemed to be unsympathetic.

However, Descartes had already given a longer version of this argument in Meditation II. Thus, despite the title, Meditation V may be primarily about the essence of shapes, such as triangles, rather than the essential property of matter in general. If it were read in that way, it would provide a natural introduction to the ontological argument. The earlier related argument, in Meditation II, depends on a review of the properties of a piece of wax. The piece of wax, which one can see, smell, feel, and so on, is introduced to counter the assumption that such things that are known through sensation are known more reliably than our own minds. The argument runs as follows. If we perceive the properties of a piece of wax, its size, shape, smell, color, or relative hardness, all these features may change (within limits) without the thing in question ceasing to be wax. It may melt when heated, it may expand in volume, it may change color, and so on. This suggests that we need a distinction between inessential features of wax – those that can change while the body in question remains a piece of wax – and its essential properties. If we imaginatively strip off, one by one, the various inessential properties of a piece of wax, and if we “take the clothes off, as it were, and consider it naked,” we find that the one property that it cannot fail to have is that it is extended. In the context of Meditation II, therefore, this diversion into thinking about wax supports the interim conclusion that even things that we thought we knew well, from experiential evidence, are known reliably only when we use our intellects to discriminate between their observable properties and their essential features.

This is a strange argument, which fails to acknowledge adequately three different distinctions. (1) One distinction that is more in the background here is between what later came to be called primary and secondary qualities, i.e. those objective features of physical things that we have reason to believe exist independently of our perceptions, and those features (such as color or smell) which bodies appear to have and which are partly a function of the interaction between bodies and our perceptual faculties. This is the distinction that resulted from the discussion of tickling sensations in *The World*, and it was still very much on Descartes’ mind when writing the *Meditations*. Descartes was still defending it, in 1649, when he rejected suggestions from the Cambridge Platonist, Henry More, that matter should be defined as “perceptible, tangible or impenetrable substance.” Descartes argued: “It is clear that if it is defined as sensible substance, then it is defined by its relation to our senses . . . However, its nature could exist, even if there were no human beings in existence” (AT v, 268).

(2) There is another distinction between those features of bodies that distinguish them as pieces of wax from other bodies that are, for example, hard pieces of honey. Descartes had been asked a number of times, especially by his principal Dutch patron, Constantijn Huygens, to engage in research in chemistry. He declined to take up that challenge, and the failure to address such issues shows clearly in his work. In the absence of even an incipient chemistry in his natural
philosophy, the theory of matter assumed by Descartes implies that wax differs from honey simply because they are each composed of different combinations of small particles of the same matter. For example, honey might include a higher proportion of long, slippery parts (which explain its viscosity), while wax might be composed a more tightly packed small particles.

Finally, Descartes wanted to establish a much more general distinction between two types of substance, between material and immaterial things, and he assumed that each type could be characterized by a single defining property. He repeats this idea in many places, including Part I of the *Principles of Philosophy*, which was written as another version of the *Meditations* in a different expository style.

A substance may indeed be known through any attribute at all; but each substance has one principal property which constitutes its nature and essence, and to which all its other properties are referred. Thus extension in length, breadth and depth constitutes the nature of corporeal substance; and thought constitutes the nature of thinking substance. Everything else which can be attributed to body presupposes extension, and is merely a mode of an extended thing; and similarly, whatever we find in the mind is simply one of the various modes of thinking. (AT viiiA, 25)

There is no independent argument here to support the conclusion that each type of substance has one defining property, or that all substances can be classified into just two general types. The discussion of matter in this text seems to be nothing more than a restating of the type of argument already sketched in the *Rules*. If we try to imagine a body which has no extension, we fail. This suggests that, insofar as imagination is a reliable guide to knowing what matter is, being extended is a necessary condition for being material. However, that leaves unanswered so many questions that it is difficult to know how Descartes might have replied to them. For example, why should the limitations of our imagination decide the essential feature of matter? Is this a conceptual analysis that masquerades as an exercise in using the imagination? To what extent does the argument rest ultimately on what we know about physical bodies from experience, since what we can imagine depends significantly on what he have already experienced? Is the definition of matter in terms of extension partly stipulative?

The concept of body that Descartes assumes, in the *Meditations*, is evidently not one for which he provides a well-developed argument. His focus, almost exclusively, is on the two topics that he had set out to discuss, namely, the status of a human soul when separated from the body, and the nature and existence of God. He wants to show readers that we have direct knowledge of our own thinking, that it is more immediately and directly known than anything else in the universe, and that even familiar objects like a piece of wax are known less directly and less certainly than one's own mind. To persuade readers of that conclusion, he need only (he thinks) show them how unreliable and inferential is our
knowledge of pieces of wax, without guaranteeing the specific account of wax that he offers.

One could possibly accept this interpretation of the *Meditations* if the Cartesian accounts of matter and mind were not interdependent, and if the arguments about the nature of mind and God did not presuppose an already agreed concept of matter. Its limitations become more evident, therefore, when Descartes has to address the apparently insoluble problem of how mind and body interact in human beings.

**Body as Non-Mind**

Robert Boyle famously criticized the evasion and sleight of hand involved in pretending to provide some information about something by saying what it is not (Boyle 1999–2000: xii, 474). Boyle argued that we provide very little information about what is meant by a “spirit” if we tell someone that it is not material, just as we would learn almost nothing about any of the curved lines studied in geometry (including parabolas, circles, spirals, and so on) if we were told simply that they are not straight lines. By reversing the spirit–body distinction, we would be equally uninformed about bodies if we first assumed that we understood what spirits are and if we were told only that bodies are non-spiritual. Boyle was reflecting on the effort involved, both experimental and theoretical, in discovering some of the physical and chemical properties of bodies. The claim that body is non-spiritual would seem, in comparison, close to telling us nothing at all about matter. Likewise, the claim that spirit is immaterial is equally uninformative.

This provides another perspective from which to view Descartes’ parallel descriptions of matter and mind. Does he claim that the mind is known to itself, directly and experientially, and that body is known in some less reliable way – which is what the wax argument suggests? Or does he claim merely that mind and body are each known in different ways, and that the most important thing is not to confuse them or to substitute one way of knowing for the other?

A detailed discussion of the Cartesian account of how each person acquires knowledge about their own mind is beyond the scope of this chapter. Nonetheless, one way of reading the *Meditations* is to understand it as an exercise in reflecting on what is already implicitly known by each person about themselves insofar as they think. The certainty of “I think” depends on the subject’s self-awareness. In a more general way, Descartes defines thought as follows:

*Thought*. I use this term to include everything that is within us in such a way that we are immediately aware of it. Thus all the operations of the will, the intellect, the imagination and the senses are thoughts. I say “immediately” so as to exclude the consequences of thoughts; a voluntary movement, for example, originates in a thought but is not itself a thought. (AT vii, 160)
If one grants that we are aware of ourselves by an immediate consciousness of the activity of thinking, as Descartes claims, then the human mind occupies a privileged place among the realities in the world of which it has knowledge. Descartes claims that this is what is distinctive about the mind, that the activity of thinking is its characteristic or defining feature, and that it is the means by which we know anything we happen to know about the mind. There is no suggestion that each person could somehow bypass the activity of thinking and introspect directly the reality of their mind. On the contrary, we are directly and immediately aware of the activity of our own thinking, which we conceive of as an activity or property of some subject or other. Even in the case of our own mind, therefore, we know the reality in question by knowing its properties – or, in this case, its one alleged principal property.

The same principle applies in the case of physical or material things. We know them by their properties. This is clear from a number of texts in the Meditations. For example, Descartes replied to an objection from Hobbes: “in general no act or accident can exist without a substance for it to belong to. But we do not come to know a substance immediately, through being aware of the substance itself; we come to know it only through its being the subject of certain acts” (AT vii, 175–6). Likewise, in reply to Arnauld, he wrote: “We do not have immediate knowledge of substances, as I have noted elsewhere. We know them only by perceiving certain forms or attributes which must inhere in something if they are to exist; and we call the thing in which they inhere a ‘substance’” (AT vii, 222). This principle, about the indirectness of our knowledge of substances, applies equally to mental or physical realities. The difference between the two, for Descartes, is that we are supposed to have a direct knowledge or awareness of the activity of thinking (and, through it, of the subject of which thinking is predicated), whereas we know the properties of material things only indirectly (and, therefore, there are two degrees of indirectness in our knowledge of material substances).

This is consistent with the account of knowing natural phenomena that had been sketched in the unpublished World and had been put to such good use in the scientific essays of 1637. We perceive the apparent properties of physical things, and we then guess what are the most likely objective features that could explain our perceptual experiences. This suggests that the Cartesian account of matter should be understood as a very general hypothesis about the stuff of the universe, which – by interacting with our senses – causes us to have the variety of perceptions that we have of it.

Basic Concepts

There is an alternative account of the limits of human knowledge in Descartes’ replies to the questions raised by Princess Elizabeth, following her first query about mind–body interaction in May 1643. On that occasion she asked: “how can the
human soul, which is only a thinking substance, determine the movement of the animal spirits in order to perform a voluntary action?” (AT iii, 661). This letter initiated a lengthy correspondence between Elizabeth and Descartes which continued even after her departure from The Hague in 1646. In one of those letters, Descartes tried to answer her question by introducing a radical distinction between: (a) the mind, the kind of concepts appropriate to its description, and the appropriate epistemic faculty by which knowledge of the mind can be acquired; and (b) the body, the concepts in terms of which it may be described, and the faculties by which we are most likely to know it successfully. The implication of this radical distinction was that one should never confuse these two non-overlapping areas, and nothing but confusion follows from the misapplication of basic concepts to an inappropriate subject matter.

First of all I distinguished three kinds of primitive ideas or notions, each of which is known in its own proper manner and not by comparison with any of the others: the notions we have of the soul, of the body, and of the union between the soul and the body . . . The soul is conceived only by the pure intellect; body . . . can likewise be known by the intellect alone, but much better by the intellect aided by the imagination; and finally what belongs to the union of the soul and the body is known . . . very clearly by the senses. (AT iii, 691–2)

This does not resolve the underlying philosophical problem, and its failure to do so was noticed immediately by Descartes’ royal correspondent. For, without any supporting evidence, this reply simply separates the mental world and the physical world into two non-overlapping sectors, and it assigns the “pure intellect” to one as the appropriate epistemic faculty and the intellect aided by the imagination to the other. The original question from Elizabeth asked why we should separate them so radically and, especially, how could we explain their interaction if they have no relevant properties in common.

The same division of functions is invoked in the Principles, which was a text that Descartes was writing at the same time as he wrote to Princess Elizabeth. On this occasion, he combines the general principles discussed above – that substances can be known only by means of their properties – with the idea that there are two general types of substance, mental and physical, and that each type has only one fundamental property.

A substance may indeed be known through any attribute at all; but each substance has one principal property which constitutes its nature and essence, and to which all its other properties are referred. Thus extension in length, breadth and depth constitutes the nature of corporeal substance; and thought constitutes the nature of thinking substance. Everything else that can be attributed to body presupposes extension, and is merely a mode of an extended thing; and similarly, whatever we find in the mind is simply one of the various modes of thinking. (AT viiiA, 25)
By this stage, in 1644, Descartes is simply repeating the fundamental claims which had helped frame the way in which he thought about mind and body for at least fifteen years. There is an elusive intimation of an argument in the suggestion that “everything attributed to body presupposes extension.” That might be translated, without confidence, as: one cannot imagine or conceive of a body which is not extended. If so, that is the argument originally used in the *Rules*. Likewise, one might assume that thought is adopted as the defining feature of the mind because the only way in which the mind is known is by reflection on its own activity of thinking (understood in as broad a sense as possible, to include everything of which we are aware). These background assumptions help explain the function and structure of the argument introduced in Meditation VI to “prove” the existence of bodies.

**A Proof of the Existence of Bodies**

The structure of the argument in the *Meditations* allows the skeptic to block knowledge claims about everything – apart from the ideas in the mind of the meditator and what can be deduced from those ideas – until the final Meditation. Meditation VI opens, appropriately, with the remark: “it remains for me to examine whether material things exist” (AT vii, 71). The opening paragraphs reflect the dualism of cognitive faculties already mentioned above, according to which the mind is known by the intellect whereas knowledge of physical things requires application of the imagination. This is illustrated by a well-known distinction between conceiving of a chiliagon and imagining the same figure. One can conceive of such a figure easily, without being able to imagine it clearly, because the total number of sides is such that it is almost impossible to form a stable image of a chiliagon in one’s imagination and to count its sides. This suggests to Descartes that perhaps the activity of imagining is a function of the body which is so united with his mind that they both cooperate in forming an image of a chiliagon. The argument for the existence of bodies, however, comes later in the same Meditation (AT vii, 79), when Descartes argues as follows.

1. I am aware of having a passive faculty of sensory perception, that is, “a faculty for receiving and recognizing the ideas of sensible objects.”
2. This passive faculty would be useless unless it were stimulated by “an active faculty,” which produces those ideas.
3. The active source of my sensory ideas is either in my own mind or in some external reality.
4. It cannot be in my mind because (a) it does not presuppose any intellectual act on my part; (b) I am not able to control if and when such sensory ideas occur to me, so that some of them occur even when I would prefer otherwise.
Therefore, this active source of my sensory ideas is some reality distinct from my mind.

This independent reality is either: (a) a body; or (b) God; or (c) some other non-material entity which is distinct from God (such as an angel or another human mind).

God is not a deceiver.

If God had arranged that I receive sensory ideas from either (b) God himself or (c) some other mental reality, it would be equivalent to deception on his part that he arranged matters in this way without providing me with any way of recognizing the genuine source of such ideas. In fact, God has given me (through human nature) a strong inclination to believe that sensory ideas originate from external physical things.

Therefore, sensory ideas do not originate directly from God or indirectly from some mental reality which is capable of making it seem to me that I perceive things which do not actually exist in the reality in question.

It follows that corporeal things exist” (AT vii, 80).

For those who are tempted by skepticism about the existence of the physical world, this is a less than convincing argument, partly because it relies at a crucial stage on the contentious claim that God exists and is not a deceiver. In other words, if one accepts the validity of the skeptic’s arguments and then raises high enough the threshold of certainty that a convincing refutation of these doubts must reach, it is likely that the skeptic will remain unmoved by this argument.

There is another way of reading it, however, which makes more sense. Descartes can be seen as describing, from the perspective of a thinking subject, the kinds of thought that occur to him. Some are such that he is able to control them more or less at will. For example, unless he is obsessive about something, he can choose to think about something or not to think about it. However, there are many other experiences to which he is subject and which fall within the wide extension of the term “thought.” They are such that, in many cases, he cannot avoid having such thoughts no matter how much he tries to avoid them. For example, he may experience pain or hunger, he may have the sensation of hearing loud noises or of seeing bright lights. He can choose not to think about a mathematical problem, but (depending on the circumstances) he sometimes cannot avoid having a sensation of pain. Descartes can then ask: what is the most plausible explanation of the fact that I am the passive subject of those experiences which are not subject to my voluntary control? Without appealing to God’s veracity, the most obvious answer is: there are realities external to my mind which cause me to have such “ideas.”

Even in making this case, however, Descartes can acknowledge the qualification about the sources of our sensations on which he had relied since writing The World. There is no reason to believe that the ideas I experience resemble the objective causes – whatever they are – which explain why I have them. Thus, he adds immediately at the conclusion of the argument outlined above: “they [i.e. corporeal
things] may not exist in a way that exactly corresponds with my sensory grasp of them, for in many cases the grasp of the senses is very obscure and confused” (AT vii, 80). Thus, in order to know the properties of the material objects that we assume are the sources of our sensory experiences, we are forced to speculate about what kinds of objective properties could cause us to have the subjective experiences over which we have such little control. With this kind of speculation, the project of constructing a physical account of natural phenomena is re-launched. Despite the objections of skeptics, Descartes can justifiably rejoin the project on which he had made so much progress in *The World*.

**Cartesian Limitations**

Many features of Descartes’ account of matter in the *Meditations* are implausible and incomplete. Part of the reason for this has already been suggested, namely, that the primary focus of that essay was not the nature of matter, its properties, or how we know them, but the existence of God and the distinction between the human soul and the body. Since claims to know the latter raised serious skeptical doubts, Descartes felt the need to confront skepticism and to offer an access to metaphysical knowledge that he claimed he could defend. In that context, matter and its properties were relocated in the penumbra of his primary metaphysical concerns.

Nevertheless, this hardly explains adequately the strongly reductionist features of the Cartesian account of matter that are evident in other work where the excuse of a focus on metaphysics is not available. Why did Descartes limit knowledge of matter to such few properties, such as the size, shape, and motion of its parts, that he seemed almost inevitably doomed to failure? One possible reason is suggested by his attitude, especially in his mature years, to claims about knowledge of God.

During the final two years of his life, Descartes was asked by two philosophers about his apparently intransigent attitude to what we can know about God. The background to the queries was a discussion within Calvinism about what were traditionally called “mysteries” in the Christian tradition. One response of philosophically astute Calvinists in the seventeenth century was to argue that we cannot be asked to believe what we do not understand. Thus, even in the case of what were traditionally called mysteries, such as the Trinity, there must be some way of understanding the three-in-one formula associated with Trinitarian beliefs if one is to believe it. The role of faith, in that interpretation, is to supply for a lack of evidence about the truth of the belief, rather than to camouflage the very meaninglessness of the object of belief. An alternative interpretation was that Christians are invited to believe something which, literally, they could not hope to understand, and that the role of faith was to compensate both for the lack of understanding and for the lack of evidence.
Descartes was sufficiently close to the first strategy that he provoked similar questions from two different philosophers at about the same time, from Antoine Arnauld and from Henry More. He also offered them both the same reply, as follows. It is a mistake to assume arrogantly that the human mind can set limits to what God is or what God can do. We should assume, rather, that God transcends the limits of our intelligence so much that even our best efforts to conceptualize God are completely inadequate. However, the question to be answered is not whether the human mind sets limits to the reality of God, but whether the human mind limits what we can understand and what, consequently, we can believe. It may be true that God can do things that we regard as contradictory. However, that is irrelevant to what we can believe. Thus, the limitations that we experience in our concepts cannot legitimately be projected onto the realities to which we apply them. They merely set limits to what we can understand or what we can talk about sensibly. This principle was made famous by Wittgenstein in the Tractatus (5.6): “The limits of my language denote the limits of my world” (Wittgenstein, 1961: 115). In a similar vein, Descartes wrote to Arnauld (July 29, 1648):

I do not think that we should ever say of anything that it cannot be brought about by God. For since every basis of truth and goodness depends on his omnipotence, I would not dare to say that God cannot make a mountain without a valley, or bring it about that 1 and 2 are not 3. I merely say that he has given me such a mind that I cannot conceive of a mountain without a valley, or a sum of 1 and 2 which is not 3. Such things involve a contradiction in my conception. (AT v, 224)

More raised a similar question, about whether God could do things that we regard as impossible. When he persisted with the suggestion that, although there was a contradiction in thinking that a completely evacuated container would continue to maintain its shape, it would still be possible for God to realize such a phenomenon, Descartes replied:

For my part, I know that my intellect is finite and God’s power is infinite, and so I set no limits to it. I consider only what I am capable of perceiving, and what not, and I take great pains that my judgment should accord with my perception. And so I boldly assert that God can do everything which I perceive to be possible, but I am not so bold as to assert the converse, namely that he cannot do what conflicts with my conception of things. I merely say that it involves a contradiction. (AT v, 272)

This explicit strategy, of limiting what we claim or believe to what we can understand without making any unsubstantiated claims about what we do not understand, was particularly relevant to theological questions. Descartes, however, adopted the same perspective with regard to matter.

This question was raised by Frans Burman in the conversation he had with Descartes in 1648. Burman asked about a passage in the Fourth Replies, in which
the author denied that we ever have an adequate knowledge of anything. The reply adapted the considerations about knowledge of God, just mentioned above, to knowledge of mathematical figures, such as a triangle, and even to bodies:

For example, let us take a triangle. This appears to be something extremely simple, of which it seems we should very easily be able to gain an adequate knowledge. However, we cannot do so. Even if we prove that it possesses all the attributes we can conceive of, nevertheless after, say, a thousand years another mathematician may detect further properties in it. It follows that we will never be certain that we have grasped everything that could have been grasped about it. The same can be said with regard to the body, and its extension, and everything else. As for the author, he has never attributed to himself an adequate knowledge of any thing whatsoever. (AT v, 151–2)

Descartes was quick to qualify this conclusion so that it did not appear to support skepticism. The argument was not that we are uncertain of everything, but that we are sufficiently certain of some things that we can confidently claim to know them without implying that there is nothing more to be known of the same realities.

This provides a new perspective of what may have locked Descartes into the apparently obstructive limitations of his concept of matter. He certainly was not in a position to say that matter had no properties apart from those that were admitted to his conceptual repertoire, and he seems to have been aware of this. The limitations within which he worked resulted, rather, from a number of independent sources, each of which may have been reasonable on its own, although their combined effect was unduly restrictive.

One limitation resulted from the Cartesian concept of explanation. By relying on an intuitive account of what we understand, Descartes argued that it is impossible to explain something that is not understood by introducing something else which is even less well understood. This was part of his objection to the substantial forms to which scholastic philosophers appealed. “Proponents of substantial forms admit that they are occult and that they do not understand them. If they say that some action results from a substantial form, that is the same as saying that it results from something that they do not understand; which explains nothing” (AT iii, 506). It remains an open question as to whether we can be said to “understand” theoretical entities which are described in terms of the properties that they must have in order to provide an explanation of the phenomena for which they were invented. However that problem is solved, Descartes adopted as a principle that it is impossible to explain some natural phenomenon by appeal to something else which is even less well understood. One of the best examples of this principle in action was the consistent opposition of corpuscularian philosophers in the seventeenth century, including Newton, to the concept of action at a distance. Since they did not “understand” how one body could affect another at a distance, the suggestion that stones fall to the ground because they are attracted to the large
mass of the earth seemed like a clear example of begging the question. A change of perspective was required in order to accept action at a distance – at least temporarily – as an unexplained fact.

Another source of the limitations built into the Cartesian concept of matter was Descartes’ adoption of a second principle that was generally shared by his contemporaries. It was widely assumed that nature must be ultimately simple, even if it proved extremely difficult to explain what “simple” meant. One way of applying such a principle was to limit both the number of laws and the number of theoretical entities by which natural phenomena were explained. Evidently, that kind of limitation might be applied prematurely or unwisely, so that the resources available to the natural philosopher would be manifestly inadequate to the task of explanation. Descartes may also have been unduly restricted in applying a principle of simplicity by considerations of what he could understand.

One might expect that, given his penchant for mathematical analysis, Descartes’ natural philosophy and the concept of matter which informed it would be significantly influenced by what could be described in mathematical terms. This consideration was most likely to apply in the case of disciplines, such as dioptrics, which were amenable to mathematical treatment in the early seventeenth century. Apart from that, however, most of Descartes’ explanations of natural phenomena were qualitative rather than quantitative, and mathematics played only a minor role in the development of his theories. In fact, the kinds of properties that Descartes was willing to predicate of matter were all borrowed from ordinary experience of familiar objects in the world around us. He explicitly appealed to the principle that the properties of microscopic bodies differ only in scale from those of macroscopic bodies. “I compare those things which, because of their small size, are not accessible to our senses with those which are, and which do not differ from the former more than a large circle differs from a small one” (AT ii, 368). When combined with what many thought was an extreme tolerance for guesswork or hypotheses, he managed to forge descriptions of how small parts of matter, with appropriate shapes and motions, could combine together to give rise to almost any natural phenomenon. The screw-shaped particles of his explanation of magnetism illustrate this tendency (Principles IV, arts 137–83).

The result of these restrictions was that Cartesian matter was uniform apart from the shape, size, arrangement, and motions of its parts, and that it had no other properties that exceeded our powers of understanding. What seems to have escaped notice is that what is deemed “intelligible” may vary with changes in theory, and that our collective willingness to accept new theoretical entities may be influenced by both experimental and conceptual innovations. It may also be affected significantly by realizing that the concepts used to describe the familiar macroscopic bodies of daily experience may be completely inadequate to describe those at the atomic or sub-atomic level.