

knowledge is the knowledge we have in virtue of having a demonstration. A demonstration therefore is a syllogistic deduction from necessary premises...

It is evident that if the premises of a syllogism are universal, then the conclusion of such a demonstration – demonstration in the strict sense – must also be an eternal truth. So there can be no demonstration with respect to perishable things, nor any scientific knowledge of them strictly speaking but only in the accidental sense; for in such cases the attribute does not belong to the subject universally, but only at a particular time and in some respect... Demonstrations and knowledge of things that occur often, such as eclipses of the moon, do hold good permanently in so far as they relate to events of a certain kind; but in so far as they do not hold good permanently, they are [not universal but merely] particular. And so in other cases...

We have said that it is not possible to achieve scientific knowledge through demonstration unless we know the premises that are primary and immediate... With regard to these starting-points, it would be strange if we possessed them all along, since then we would possess knowledge superior to demonstration without being aware of it. But if, by contrast, we acquire them, and did not possess them earlier, how would we come to know them and learn them in the absence of any pre-existing knowledge? That is impossible, as we said earlier with regard to demonstration.¹ Thus it is clearly impossible either for us to possess them all along, or for us to acquire them if we are ignorant and have no predisposition for knowledge. So we must already have some capacity...

This capacity evidently belongs to all animals, since they have an innate power of discernment – what we call *sense-perception*. Though it is innate, there are some animals in which the sense-impression persists, while in others it does not. For the latter group... there is no knowledge outside the act of perceiving; but others can retain something in the mind after perceiving it. And when this happens frequently, we get a difference arising as a result of the retention, some come to develop a *logos*² and others do not.

Thus from sense-perception there arises memory; and when there is repeated memory of the same thing, there arises *experience* (for though there are many memories, they make up a single experience). And from experience – the whole universal now established in the mind (the *one* distinct from the *many*, whatever is *one and the same* in all the many instances) – there arises the starting-point of a skill, or of scientific knowledge (skill if it concerns what merely comes to be, scientific knowledge if it concerns what *is*).

Thus these dispositions are neither innate in a determinate form, nor on the other hand do they arise from other higher states of knowledge, but they come about from sense-perception. It happens just as in battle when there is a rout: if one man stands fast, another does, and then another, until a position of strength is reached. The mind is so constituted as to be capable of this.

Let us now restate the account we have just given, which was not very clear. When one of the undifferentiated particular things ‘stands fast’, a primitive universal is in the mind; for although what one perceives is the particular thing, the perception is of a universal – for example of a *man*, not of Callias, the particular individual. Again,

a stand is made in these primitive universals, and the process continues until the ultimate universal concepts stand (for example, such and such a species of animal is a step towards the general kind *animal*, and so on). So clearly it is [not by deduction but] by induction that we have to get to know the starting-points.

Concerning the intellectual faculties by which we reach the truth, some are always true, while others, such as opinion and reasoning, admit of falsehood; scientific knowledge and intuition (*nous*) are always true. No other kind of thought except intuition is more accurate than scientific knowledge, and the starting-points are more knowable than the demonstrations which proceed from them... Hence there cannot be scientific knowledge of the starting-points; and since nothing can be more true than scientific knowledge except intuition, it is intuition that grasps the starting-points.

4 New Foundations for Knowledge: René Descartes, *Meditations**

Both in Plato's search for eternal, unchanging objects of knowledge, and in Aristotle's definition of true knowledge as being of that which cannot be otherwise, we can see the idea that what qualifies as knowledge must have a certain stability. Many centuries later, at the start of what is known as the ‘early modern’ period, this theme was taken up, though in a very different way, by René Descartes, whose writings had a profound effect on the subsequent development of philosophy in general and epistemology in particular.

Descartes became struck by the instability and unreliability of many of the accepted doctrines he had been taught as a student. In his *Discourse on the Method* (*Discours de la méthode*) published anonymously in 1637, he remarked of the philosophy he had learnt at school that despite having been taught for many centuries, it contained ‘no point that was not disputed and hence doubtful’. And as for other sciences, in so far as they borrowed their principles from philosophy, ‘nothing solid could be built on such shaky foundations’. In his masterpiece, the *Meditations on First Philosophy*, published in Latin in 1641, Descartes records his determination to sweep away all previously accepted opinions,

and start afresh. His project is nothing less than the reconstruction of knowledge from the foundations upwards. To pursue this goal, he devises a systematic method of doubt: anything that can be called into question, for any reason whatever, will be discarded. Previous beliefs acquired via the senses are all jettisoned, on the grounds that the senses have sometimes proved unreliable. Even such straightforward beliefs as ‘I am now sitting by the fire’ are doubted, on the grounds that I might be dreaming; and the argument is then broadened to question whether I can know for certain that anything external to the mind really exists. The argument next turns to the abstract propositions of mathematics, which seem to be immune from the previous doubts since their truth does not depend on whether their objects actually exist; but even these are called into question by the thought that an all-powerful God might make me go wrong ‘every time I add two and three’. To reinforce all the doubts, an imaginary scenario is introduced of a ‘malicious demon of the utmost power who employs all his energies to deceive me’. Finally, at the start of the Second Meditation, the meditator reaches his ‘Archimedean point’. No matter how much he is deceived, there is one truth that

¹ Compare the first sentence of this extract.

² A (rational) account or general concept.

* René Descartes, *Meditations on First Philosophy* [*Meditationes de prima philosophia*, 1641], Meditation I and part of II. Trans. J. Cottingham (Cambridge: Cambridge University Press, 1986; rev. edn 1996), pp. 12–17.

cannot be doubted: 'I am, I exist, is certain, every time it is conceived in the mind.' This, elsewhere expressed in the famous formula 'I am thinking

therefore I exist' (in French, *je pense donc je suis*, or, in Latin, *cogito ergo sum*) is the first principle of Descartes's new philosophy.



What can be called into doubt

Some years ago I was struck by the large number of falsehoods that I had accepted as true in my childhood, and by the highly doubtful nature of the whole edifice that I had subsequently based on them. I realized that it was necessary, once in the course of my life, to demolish everything completely and start again right from the foundations if I wanted to establish anything at all in the sciences that was stable and likely to last. But the task looked an enormous one, and I began to wait until I should reach a mature enough age to ensure that no subsequent time of life would be more suitable for tackling such inquiries. This led me to put the project off for so long that I would now be to blame if by pondering over it any further I wasted the time still left for carrying it out. So today I have expressly rid my mind of all worries and arranged for myself a clear stretch of free time. I am here quite alone, and at last I will devote myself sincerely and without reservation to the general demolition of my opinions.

But to accomplish this, it will not be necessary for me to show that all my opinions are false, which is something I could perhaps never manage. Reason now leads me to think that I should hold back my assent from opinions which are not completely certain and indubitable just as carefully as I do from those which are patently false. So, for the purpose of rejecting all my opinions, it will be enough if I find in each of them at least some reason for doubt. And to do this I will not need to run through them all individually, which would be an endless task. Once the foundations of a building are undermined, anything built on them collapses of its own accord; so I will go straight for the basic principles on which all my former beliefs rested.

Whatever I have up till now accepted as most true I have acquired either from the senses or through the senses. But from time to time I have found that the senses deceive, and it is prudent never to trust completely those who have deceived us even once.

Yet although the senses occasionally deceive us with respect to objects which are very small or in the distance, there are many other beliefs about which doubt is quite impossible, even though they are derived from the senses – for example, that I am here, sitting by the fire, wearing a winter dressing-gown holding this piece of paper in my hands, and so on. Again, how could it be denied that these hands or this whole body are mine? Unless perhaps I were to liken myself to madmen, whose brains are so damaged by the persistent vapours of melancholia that they firmly maintain they are kings when they are paupers, or say they are dressed in purple when they are naked, or that their heads are made of earthenware, or that they are pumpkins, or made of glass. But such people are insane, and I would be thought equally mad if I took anything from them as a model for myself.

A brilliant piece of reasoning! As if I were not a man who sleeps at night, and regularly has all the same experiences while asleep as madmen do when awake – indeed sometimes even more improbable ones. How often, asleep at night, am I convinced of just such familiar events – that I am here in my dressing-gown, sitting by the fire – when in fact I am lying undressed in bed! Yet at the moment my eyes are certainly wide awake when I look at this piece of paper; I shake my head and it is not asleep; as I stretch

out and feel my hand I do so deliberately, and I know what I am doing. All this would not happen with such distinctness to someone asleep. Indeed! As if I did not remember other occasions when I have been tricked by exactly similar thoughts while asleep! As I think about this more carefully, I see plainly that there are never any sure signs by means of which being awake can be distinguished from being asleep. The result is that I begin to feel dazed, and this very feeling only reinforces the notion that I may be asleep.

Suppose then that I am dreaming, and that these particulars – that my eyes are open, that I am moving my head and stretching out my hands are not true. Perhaps, indeed, I do not even have such hands or such a body at all. None the less, it must surely be admitted that the visions which come in sleep are like paintings, which must have been fashioned in the likeness of things that are real, and hence that at least these general kinds of things – eyes, head, hands and the body as a whole – are things which are not imaginary but are real and exist. For even when painters try to create sirens and satyrs with the most extraordinary bodies, they cannot give them natures which are new in all respects; they simply jumble up the limbs of different animals. Or if perhaps they manage to think up something so new that nothing remotely similar has ever been seen before – something which is therefore completely fictitious and unreal – at least the colours used in the composition must be real. By similar reasoning, although these general kinds of things – eyes, head, hands and so on – could be imaginary, it must at least be admitted that certain other even simpler and more universal things are real. These are as it were the real colours from which we form all the images of things, whether true or false, that occur in our thought.

This class appears to include corporeal nature in general, and its extension; the shape of extended things; the quantity, or size and number of these things; the place in which they may exist, the time through which they may endure, and so on.

So a reasonable conclusion from this might be that physics, astronomy, medicine, and all other disciplines which depend on the study of composite things, are doubtful; while arithmetic, geometry and other subjects of this kind, which deal only with the simplest and most general things, regardless of whether they really exist in nature or not, contain something certain and indubitable. For whether I am awake or asleep, two and three added together are five, and a square has no more than four sides. It seems impossible that such transparent truths should incur any suspicion of being false.

And yet firmly rooted in my mind is the long-standing opinion that there is an omnipotent God who made me the kind of creature that I am. How do I know that he has not brought it about that there is no earth, no sky, no extended thing, no shape, no size, no place, while at the same time ensuring that all these things appear to me to exist just as they do now? What is more, since 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? But perhaps God would not have allowed me to be deceived in this way, since he is said to be supremely good. But if it were inconsistent with his goodness to have created me such that I am deceived all the time, it would seem equally foreign to his goodness to allow me to be deceived even occasionally; yet this last assertion cannot be made.

Perhaps there may be some who would prefer to deny the existence of so powerful a God rather than believe that everything else is uncertain. Let us not argue with them, but grant them that everything said about God is a fiction. According to their

supposition, then, I have arrived at my present state by fate or chance or a continuous chain of events, or by some other means; yet since deception and error seem to be imperfections, the less powerful they make my original cause, the more likely it is that I am so imperfect as to be deceived all the time. I have no answer to these arguments, but am finally compelled to admit that there is not one of my former beliefs about which a doubt may not properly be raised; and this is not a flippant or ill-considered conclusion, but is based on powerful and well thought-out reasons. So in future I must withhold my assent from these former beliefs just as carefully as I would from obvious falsehoods, if I want to discover any certainty.

But it is not enough merely to have noticed this; I must make an effort to remember it. My habitual opinions keep coming back, and, despite my wishes, they capture my belief, which is as it were bound over to them as a result of long occupation and the law of custom. I shall never get out of the habit of confidently assenting to these opinions, so long as I suppose them to be what in fact they are, namely highly probable opinions – opinions which, despite the fact that they are in a sense doubtful, as has just been shown, it is still much more reasonable to believe than to deny. In view of this, I think it will be a good plan to turn my will in completely the opposite direction and deceive myself, by pretending for a time that these former opinions are utterly false and imaginary. I shall do this until the weight of preconceived opinion is counterbalanced and the distorting influence of habit no longer prevents my judgement from perceiving things correctly. In the meantime, I know that no danger or error will result from my plan, and that I cannot possibly go too far in my distrustful attitude. This is because the task now in hand does not involve action but merely the acquisition of knowledge.

I will suppose therefore that not God, who is supremely good and the source of truth, but rather some malicious demon of the utmost power and cunning has employed all his energies in order to deceive me. I shall think that the sky, the air, the earth, colours, shapes, sounds and all external things are merely the delusions of dreams which he has devised to ensnare my judgement. I shall consider myself as not having hands or eyes, or flesh, or blood or senses, but as falsely believing that I have all these things. I shall stubbornly and firmly persist in this meditation; and, even if it is not in my power to know any truth, I shall at least do what is in my power, that is, resolutely guard against assenting to any falsehoods, so that the deceiver, however powerful and cunning he may be, will be unable to impose on me in the slightest degree. But this is an arduous undertaking, and a kind of laziness brings me back to normal life. I am like a prisoner who is enjoying an imaginary freedom while asleep; as he begins to suspect that he is asleep, he dreads being woken up, and goes along with the pleasant illusion as long as he can. In the same way, I happily slide back into my old opinions and dread being shaken out of them, for fear that my peaceful sleep may be followed by hard labour when I wake, and that I shall have to toil not in the light, but amid the inextricable darkness of the problems I have now raised.

[So ends the First Meditation. In the opening of the Second Meditation, which follows, Descartes's meditator struggles to escape from the morass of doubt into which he has fallen.]

So serious are the doubts into which I have been thrown as a result of yesterday's meditation that I can neither put them out of my mind nor see any way of resolving

them. It feels as if I have fallen unexpectedly into a deep whirlpool which tumbles me around so that I can neither stand on the bottom nor swim up to the top. Nevertheless I will make an effort and once more attempt the same path which I started on yesterday. Anything which admits of the slightest doubt I will set aside just as if I had found it to be wholly false; and I will proceed in this way until I recognize something certain, or, if nothing else, until I at least recognize for certain that there is no certainty. Archimedes used to demand just one firm and immovable point in order to shift the entire earth; so I too can hope for great things if I manage to find just one thing, however slight, that is certain and unshakeable.

I will suppose then, that everything I see is spurious. I will believe that my memory tells me lies, and that none of the things that it reports ever happened. I have no senses. Body, shape, extension, movement and place are chimeras. So what remains true? Perhaps just the one fact that nothing is certain.

Yet apart from everything I have just listed, how do I know that there is not something else which does not allow even the slightest occasion for doubt? Is there not a God, or whatever I may call him, who puts into me the thoughts I am now having? But why do I think this, since I myself may perhaps be the author of these thoughts? In that case am not I, at least, something? But I have just said that I have no senses and no body. This is the sticking point: what follows from this? Am I not so bound up with a body and with senses that I cannot exist without them? But I have convinced myself that there is absolutely nothing in the world, no sky, no earth, no minds, no bodies. Does it now follow that I too do not exist?

No: if I convinced myself of something then I certainly existed. But there is a deceiver of supreme power and cunning who is deliberately and constantly deceiving me. In that case I too undoubtedly exist, if he is deceiving me; and let him deceive me as much as he can, he will never bring it about that I am nothing so long as I think that I am something. So after considering everything very thoroughly, I must finally conclude that this proposition, *I am, I exist*, is necessarily true whenever it is put forward by me or conceived in my mind.

5 The Senses as the Basis of Knowledge: John Locke, *Essay concerning Human Understanding**

One of the striking features of Descartes's approach to knowledge was its 'internal' starting-point. 'I resolved one day to pursue my studies within myself', he wrote in the *Discourse*; and in the above extract from the *Meditations* we see him carrying out the strategy of leading the

mind away from the outside world, away from the external senses, and focusing on the meditator's inner awareness of his own existence. This very private beginning may not seem a promising start for the construction of an objective system of knowledge. But what Descartes does

* John Locke, *An Essay concerning Human Understanding* [1690], extracts (with omissions) from Bk I, ch. 2, §§ 1–5 and 12–16; Bk II, ch. 1, §§ 1–5; spelling and punctuation revised. There are many available editions of the *Essay*, of which the most definitive is the critical edition of P. H. Nidditch (Oxford: Clarendon, 1975); cf. pp. 48–58.