READING 14

Meditations on First Philosophy

René Descartes

René Descartes was born in La Haye (now called Descartes), France, in 1596. As a youth he was educated by the Jesuits at their college in La Flèche. Around 1614 he began studying at the University of Poitiers, receiving his law degree in 1616. Deciding to travel rather than practice law, he went to Holland in 1618 to serve in the army of the Dutch Prince Maurice of Nassau as a gentleman volunteer. One day in November 1619, while on a military tour of Germany, Descartes sat alone in a room reflecting on a new philosophical system that would unify all branches of knowledge and give them the certainty of mathematics. That night he had three dreams, which he interpreted as a divine commission to construct this new system of knowledge. He left the army shortly afterwards and traveled for several years. In 1628 he settled in Holland, where he lived for more than 20 years. There he did research in science and in mathematics (laying the foundations for analytic geometry) and developed his philosophy. In 1649, after much hesitation, Descartes acceded to the request of Queen Christina of Sweden to come to Stockholm to tutor her in philosophy. The harsh winter and the rigorous schedule imposed on him by the queen (philosophy lessons at five o'clock in the morning, for example) took their toll on his health: He died of pneumonia in 1650.

Descartes' major works are *Rules for the Direction of the Mind* (written in 1628, published posthumously), *Discourse on Method* (1637), *Meditations on First Philosophy* (1641), *Principles of Philosophy* (1644), and *The Passions of the Soul* (1649).

Our reading is from *Meditations on First Philosophy.* (By "first philosophy" Descartes means truths about the basic topics of philosophy, which for him are God, the soul [mind], and the external world.) In the First Meditation, Descartes explains his "method of doubt": He will not accept as true anything of which he cannot be absolutely certain. But practically everything seems open to doubt; Descartes reflects that he might even be deceived in his belief that there is an external world. For how can he be sure that there is not some powerful "malicious demon" who tricks him into thinking there is an external world by placing images directly in his mind?

In the Second Meditation, Descartes realizes that he can be absolutely certain of at least one thing—that he exists. For even if he is deceived about the existence of the external world, he could not be deceived unless he existed. As he formulates this argument elsewhere, "I think, therefore I am." This "I" that exists is "a thing that thinks." Descartes goes on to argue that if there are material things, their essential nature would be extension (three-dimensionality), and that extension is grasped by the mind, not by the senses.

In our selection from the Third Meditation, Descartes reflects on the certitude of his own existence and formulates a general criterion for truth: "Whatever I perceive very clearly and distinctly is true." He then presents a proof for the existence of God. He finds that his mind contains an idea of an infinite being, and reasons that he himself—who is merely a *finite* being—could not have invented such an idea. Descartes concludes that the idea of an infinite being must have been placed in his mind by the infinite being itself. Therefore this infinite being (God) exists.

FIRST MEDITATION. 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 that are not completely certain and indubitable just as carefully as I do from those that 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 that 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 vapors 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. Nonetheless, it must surely be admitted that the visions that 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 that are not imaginary but are real and exist. For even when painters try to create sirens and satyrs[1] with the most extraordinary bodies, they cannot give them natures that 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 that is therefore completely fictitious and unreal—at least the colors 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 colors 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 that 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, just as I consider that

---

[1] In Greek mythology, *sirens* are female, partly human creatures who lure sailors to their destruction with their beautiful singing; *satyrs* are woodland creatures with features of both a horse and a goat, fond of unrestrained revelry. [D. C. Abel]

others sometimes go astray in cases where they think they have the most perfect knowledge, how do I know that God has not brought it about that I too 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 the 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 that, 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 judgment 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, colors, shapes, sounds, and all external things are merely the delusions of dreams that he has devised to ensnare my judgment. 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 labor 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.

SECOND MEDITATION. THE NATURE OF THE HUMAN MIND, AND HOW IT IS BETTER KNOWN THAN THE BODY

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 that 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 that I started on yesterday. Anything that 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[2] 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 unshakable.

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.[3] 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 that 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

[2]Archimedes (about 287–212 B.C.E.) was a Greek mathematician and inventor. [D. C. ABEL]
[3]*chimeras:* mental fabrications. [D. C. ABEL]

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.

But I do not yet have a sufficient understanding of what this "I" is, that now necessarily exists. So I must be on my guard against carelessly taking something else to be this "I," and so making a mistake in the very item of knowledge that I maintain is the most certain and evident of all. I will therefore go back and meditate on what I originally believed myself to be, before I embarked on this present train of thought. I will then subtract anything capable of being weakened, even minimally, by the arguments now introduced, so that what is left at the end may be exactly and only what is certain and unshakable.

What then did I formerly think I was? A man. But what is a man? Shall I say "a rational animal"? No; for then I should have to inquire what an animal is, what rationality is, and in this way one question would lead me down the slope to other harder ones, and I do not now have the time to waste on subtleties of this kind. Instead I propose to concentrate on what came into my thoughts spontaneously and quite naturally whenever I used to consider what I was. Well, the first thought to come to mind was that I had a face, hands, arms, and the whole mechanical structure of limbs that can be seen in a corpse, and which I called the body. The next thought was that I was nourished, that I moved about, and that I engaged in sense-perception and thinking; and these actions I attributed to the soul. But as to the nature of this soul, either I did not think about this or else I imagined it to be something tenuous, like a wind or fire or ether, that permeated my more solid parts. As to the body, however, I had no doubts about it, but thought I knew its nature distinctly. If I had tried to describe the mental conception I had of it, I would have expressed it as follows: By a body I understand whatever has a determinable shape and a definable location and can occupy a space in such a way as to exclude any other body; it can be perceived by touch, sight, hearing, taste, or smell, and can be moved in various ways, not by itself but by whatever else comes into contact with it. For, according to my judgment, the power of self-movement, like the power of sensation or of thought, was quite foreign to the nature of a body; indeed, it was a source of wonder to me that certain bodies were found to contain faculties of this kind.

But what shall I now say that I am, when I am supposing that there is some supremely powerful and, if it is permissible to say so, malicious deceiver, who is deliberately trying to trick me in every way he can? Can I now assert that I possess even the most insignificant of all the attributes that I have just said belong to the nature of a body? I scrutinize them, think about them, go over them again, but nothing suggests itself; it is tiresome and pointless to go through the list once more. But what about the attributes I assigned to the soul? Nutrition or movement? Since now I do not have a body, these are mere fabrications. Sense-perception? This surely does not occur without a body, and besides, when asleep I have appeared to perceive through the senses many things that I afterwards realized I did not perceive through the senses at all. Thinking? At last I have discovered it: thought—this alone is inseparable from me. I am, I exist—that is certain. But for how long? For as long as I am thinking. For it could be that were I totally to cease from thinking, I should totally cease to exist. At present I am not admitting anything except what is necessarily true.

I am, then, in the strict sense, only a thing that thinks; that is, I am a mind, or intelligence, or intellect, or reason—words whose meaning I have been ignorant of until now. But for all that, I am a thing that is real and that truly exists. But what kind of a thing? As I have just said—a thinking thing.

What else am I? I will use my imagination. I am not that structure of limbs that is called a human body. I am not even some thin vapor that permeates the limbs—a wind, fire, air, breath, or whatever I depict in my imagination; for these are things that I have supposed to be nothing. Let this supposition stand; for all that, I am still something. And yet may it not perhaps be the case that these very things that I am supposing to be nothing, because they are unknown to me, are in reality identical with the "I" of which I am aware? I do not know, and for the moment I shall not argue the point, since I can make judgments only about things that are known to me. I know that I exist; the question is, what is this "I" that I know? If the "I" is understood strictly as we have been taking it, then it is quite certain that knowledge of it does not depend on things of whose existence I am as yet unaware; so it cannot depend on any of the things that I invent in my imagination. And this very word "invent" shows me my mistake. It would indeed be a case of fictitious invention if I used my imagination to establish that I was something or other; for imagining is simply contemplating the shape or image of a corporeal thing. Yet now I know for certain both that I exist and at the same time that all such images and, in general, everything relating to the nature of body, could be mere dreams <and chimeras>.[4] Once this point has been grasped, to say "I will use my imagination to get to know more distinctly what I am" would seem to be as silly as saying "I am now awake, and see some truth; but since my vision is not yet clear enough, I will deliberately fall asleep so that my dreams may provide a truer and clearer representation." I thus realize that none of the things that the imagination enables me to grasp is at all relevant to this knowledge of myself that I possess, and that the mind must therefore be most carefully diverted from such things if it is to perceive its own nature as distinctly as possible.

But what then am I? A thing that thinks. What is that? A thing that doubts, understands, affirms, denies, is willing, is unwilling, and also imagines and has sensory perceptions. . . .

Let us consider the things that people commonly think they understand most distinctly of all; that is, the bodies that we touch and see. I do not mean bodies in general—for general perceptions are apt to be somewhat more confused—but one particular body. Let us take, for example, this piece of wax. It has just been taken from the honeycomb; it has not yet quite lost the taste of the honey; it retains some of the scent of the flowers from which it was gathered; its color, shape, and size are plain to see; it is hard, cold, and can be handled without difficulty; if you rap it with your knuckles it makes a sound. In short, it has everything that appears necessary to enable a body to be known as

---

[4]Words placed in angle brackets appear in the French version of *Meditations on First Philosophy* but not in the original Latin version. Louis-Charles d'Albert, Duc de Luyens (1620–1690), published a French translation that included some alterations from the original text. Descartes approved the translation, but scholars do not consider it as authoritative as the original Latin text. [D. C. ABEL]

distinctly as possible. But even as I speak, I put the wax by the fire, and look: The residual taste is eliminated, the smell goes away, the color changes, the shape is lost, the size increases; it becomes liquid and hot; you can hardly touch it, and if you strike it, it no longer makes a sound. But does the same wax remain? It must be admitted that it does; no one denies it, no one thinks otherwise. So what was it in the wax that I understood with such distinctness? Evidently none of the features that I arrived at by means of the senses; for whatever came under taste, smell, sight, touch, or hearing has now altered—yet the wax remains.

Perhaps the answer lies in the thought that now comes to my mind—namely, the wax was not after all the sweetness of the honey, or the fragrance of the flowers, or the whiteness, or the shape, or the sound, but was rather a body that presented itself to me in these various forms a little while ago, but that now exhibits different ones. But what exactly is it that I am now imagining? Let us concentrate, take away everything that does not belong to the wax, and see what is left: merely something extended, flexible, and changeable. But what is meant here by "flexible" and "changeable"? Is it what I picture in my imagination: that this piece of wax is capable of changing from a round shape to a square shape, or from a square shape to a triangular shape? Not at all; for I can grasp that the wax is capable of countless changes of this kind, yet I am unable to run through this immeasurable number of changes in my imagination, from which it follows that it is not the faculty of imagination that gives me my grasp of the wax as flexible and changeable. And what is meant by "extended"? Is the extension of the wax also unknown? For it increases if the wax melts, increases again if it boils, and is greater still if the heat is increased. I would not be making a correct judgment about the nature of wax unless I believed it capable of being extended in many more different ways than I will ever encompass in my imagination. I must therefore admit that the nature of this piece of wax is in no way revealed by my imagination, but is perceived by the mind alone. (I am speaking of this particular piece of wax; the point is even clearer with regard to wax in general.) But what is this wax that is perceived by the mind alone? It is of course the same wax that I see, that I touch, that I picture in my imagination, in short the same wax that I thought it to be from the start. And yet, and here is the point, the perception I have of it is a case not of vision or touch or imagination—nor has it ever been, despite previous appearances—but of purely mental scrutiny; and this can be imperfect and confused, as it was before, or clear and distinct as it is now, depending on how carefully I concentrate on what the wax consists in.

But as I reach this conclusion I am amazed at how <weak and> prone to error my mind is. For although I am thinking about these matters within myself, silently and without speaking, nonetheless the actual words bring me up short, and I am almost tricked by ordinary ways of talking. We say that we see the wax itself, if it is there before us, not that we judge it to be there from its color or shape; and this might lead me to conclude without more ado that knowledge of the wax comes from what the eye sees, and not from the scrutiny of the mind alone. But then if I look out of the window and see men crossing the square, as I just happen to have done, I normally say that I see the men themselves, just as I say that I see the wax. Yet do I see any more than hats and coats that could conceal automatons? I *judge* that they are men. And so something that I thought

I was seeing with my eyes is in fact grasped solely by the faculty of judgment that is in my mind. . . .

THIRD MEDITATION. THE EXISTENCE OF GOD

I will now shut my eyes, stop my ears, and withdraw all my senses. I will eliminate from my thoughts all images of bodily things, or rather, since this is hardly possible, I will regard all such images as vacuous, false, and worthless. I will converse with myself and scrutinize myself more deeply; and in this way I will attempt to achieve, little by little, a more intimate knowledge of myself. I am a thing that thinks—that is, a thing that doubts, affirms, denies, understands a few things, is ignorant of many things, is willing, is unwilling, and also that imagines and has sensory perceptions. For, as I have noted before, even though the objects of my sensory experience and imagination may have no existence outside me, nonetheless the modes of thinking that I refer to as cases of sensory perception and imagination, insofar as they are simply modes of thinking, do exist within me—of that I am certain.

In this brief list I have gone through everything I truly know, or at least everything I have so far discovered that I know. Now I will cast around more carefully to see whether there may be other things within me that I have not yet noticed. I am certain that I am a thinking thing. Do I not therefore also know what is required for my being certain about anything? In this first item of knowledge there is simply a clear and distinct perception of what I am asserting; this would not be enough to make me certain of the truth of the matter if it could ever turn out that something that I perceived with such clarity and distinctness was false. So I now seem to be able to lay it down as a general rule that whatever I perceive very clearly and distinctly is true. . . .

Among my ideas, some appear to be innate, some to be adventitious,[5] and others to have been invented by me. My understanding of what a thing is, what truth is, and what thought is, seems to derive simply from my own nature. But my hearing a noise, as I do now, or seeing the sun or feeling the fire, comes from things that are located outside me, or so I have hitherto judged. Lastly, sirens, hippogriffs,[6] and the like are my own invention. But perhaps all my ideas may be thought of as adventitious, or they may all be innate, or all made up; for as yet I have not clearly perceived their true origin.

But the chief question at this point concerns the ideas that I take to be derived from things existing outside me: What is my reason for thinking that they resemble these things? Nature has apparently taught me to think this. But in addition I know by experience that these ideas do not depend on my will, and hence that they do not depend simply on me. Frequently I notice them even when I do not want to. Now, for example, I feel the heat whether I want to or not, and this is why I think that this sensation or idea of heat comes to me from

---

[5]*adventitious:* coming from an external source. [D. C. ABEL]

[6]*hippogriffs:* mythical animals that are part horse and part griffin (a griffin itself is a mythological animal that is part eagle and part lion). [D. C. ABEL]

something other than myself, namely the heat of the fire by which I am sitting. And the most obvious judgment for me to make is that the thing in question transmits to me its own likeness rather than something else.

I will now see if these arguments are strong enough. When I say "Nature taught me to think this," all I mean is that a spontaneous impulse leads me to believe it, not that its truth has been revealed to me by some natural light. There is a big difference here. Whatever is revealed to me by the natural light—for example that from the fact that I am doubting it follows that I exist, and so on—cannot in any way be open to doubt. This is because there cannot be another faculty both as trustworthy as the natural light and also capable of showing me that such things are not true. But as for my natural impulses, I have often judged in the past that they were pushing me in the wrong direction when it was a question of choosing the good, and I do not see why I should place any greater confidence in them in other matters.

Then again, although these ideas do not depend on my will, it does not follow that they must come from things located outside me. Just as the impulses that I was speaking of a moment ago seem opposed to my will even though they are within me, so there may be some other faculty, not yet fully known to me, that produces these ideas without any assistance from external things; this is, after all, just how I have always thought ideas are produced in me when I am dreaming.

And finally, even if these ideas did come from things other than myself, it would not follow that they must resemble those things. Indeed, I think I have often discovered a great disparity <between an object and its idea> in many cases. For example, there are two different ideas of the sun that I find within me. One of them, which is acquired as it were from the senses and which is a prime example of an idea that I reckon to come from an external source, makes the sun appear very small. The other idea is based on astronomical reasoning, that is, it is derived from certain notions that are innate in me (or else it is constructed by me in some other way), and this idea shows the sun to be several times larger than the earth. Obviously both these ideas cannot resemble the sun that exists outside me; and reason persuades me that the idea that seems to have emanated most directly from the sun itself has in fact no resemblance to it at all.

All these considerations are enough to establish that it is not reliable judgment but merely some blind impulse that has made me believe up till now that there exist things distinct from myself that transmit to me ideas or images of themselves through the sense organs or in some other way. . . .

Among my ideas, apart from the idea that gives me a representation of myself, which cannot present any difficulty in this context, there are ideas that variously represent God, corporeal and inanimate things, angels, animals, and finally other men like myself.

As far as concerns the ideas that represent other men, or animals, or angels, I have no difficulty in understanding that they could be put together from the ideas I have of myself, of corporeal things and of God, even if the world contained no men besides me, no animals and no angels.

As to my ideas of corporeal things, I can see nothing in them that is so great <or excellent> as to make it seem impossible that it originated in myself. . . .

So there remains only the idea of God; and I must consider whether there is anything in the idea that could not have originated in myself. By the word "God" I understand a substance that is infinite, <eternal, immutable,> independent, supremely intelligent, supremely powerful, and that created both myself and everything else (if anything else there be) that exists. All these attributes are such that, the more carefully I concentrate on them, the less possible it seems that they could have originated from me alone. So from what has been said it must be concluded that God necessarily exists.

It is true that I have the idea of substance in me in virtue of the fact that I am a substance. But this would not account for my having the idea of an infinite substance, when I am finite, unless this idea proceeded from some substance that really was infinite.

And I must not think that, just as my conceptions of rest and darkness are arrived at by negating movement and light, so my perception of the infinite is arrived at not by means of a true idea but merely by negating the finite. On the contrary, I clearly understand that there is more reality in an infinite substance than in a finite one, and hence that my perception of the infinite—that is, God—is in some way prior to my perception of the finite—that is, myself. For how could I understand that I doubted or desired (that is, lacked something) and that I was not wholly perfect, unless there were in me some idea of a more perfect being that enabled me to recognize my own defects by comparison? . . .

It only remains for me to examine how I received this idea from God. For I did not acquire it from the senses; it has never come to me unexpectedly, as usually happens with the ideas of things that are perceivable by the senses, when these things present themselves to the external sense organs—or seem to do so. And it was not invented by me either; for I am plainly unable either to take away anything from it or to add anything to it. The only remaining alternative is that it is innate in me, just as the idea of myself is innate in me.[7]

---

[7]In his Fifth Meditation, Descartes gives an additional proof for the existence of God. The argument appears on pp. 206–207 of this book. [D. C. ABEL]

READING 20

The Case for Physicalism

Peter Carruthers

Peter Carruthers was born 1952 in Manila, Republic of the Philippines. He attended the University of Leeds, England, where he completed his bachelor's degree in philosophy in 1975 and his master's degree in 1977. He pursued further studies at Balliol College, Oxford University, finishing his doctorate in philosophy in 1980. The following year Carruthers accepted a position as Lecturer in Philosophy Queens University of Belfast, Ireland. In 1985 he transferred to the University of Essex, England. Six years later he was appointed senior lecturer at the University of Sheffield, England, and was made professor the next year. At Sheffield he founded and directed the Hang Seng Centre for Cognitive Studies. Carruthers moved to the United States in 2001, becoming professor of philosophy at the University of Maryland and associate member of the Neuroscience and Cognitive Science Program. He chaired the Philosophy Department at Maryland from 2001 to 2008. In 2007 he was visiting research scientist at the Center for Adaptive Behavior and Cognition at the Max Planck Institute for Human Development in Berlin, Germany. In 2009 he received a National Science Foundation Scholar's Award to do research on the cognitive science of self-knowledge.

Carruthers has published numerous journal articles and a dozen books, including *Introducing Persons: Theories and Arguments in the Philosophy of Mind* (1986); *Language, Thought, and Consciousness: An Essay in Philosophical Psychology* (1996); *Phenomenal Consciousness: A Naturalistic Theory* (2002); *The Nature of the Mind: An Introduction* (2004); and *The Architecture of the Mind: Massive Modularity and the Flexibility of Thought* (2007).

Our reading is from Chapter 5 of *The Nature of the Mind,* "The Case for Physicalism." *Physicalism* is the view that all the states and processes involved in the human mind are ultimately physical states and processes. Carruthers argues for the "mind-brain identity" version of physicalism—that all mental states and processes are in fact brain states and processes. He bases his argument on two generally accepted scientific principles. The first one, the *closure of physics* states that all atomic and subatomic events happen in accordance with the laws of physics, that events at higher levels of description (for example, chemistry, biology, neurology, psychology) are *realized in* or *constituted by* atomic and subatomic events, and that therefore no nonphysical mental events could affect bodily behavior. The second principle, the *unity of nature,* states that nature is a system of layers of causal organization, that the bottom layer is physics, that all the ascending, higher layers (chemistry, biochemistry, biology, and so on) can be explained in terms of lower levels, and that therefore all events in nature can be explained ultimately in terms of physics. Carruthers argues that we should accept these principles because they have been successful methodological assumptions of scientific inquiry. Applying these principles to the explanation mental events, we can reasonably conclude that mental events are realized in the brain.

Carruthers discusses and rejects two theories that deny that mental events are brain events: *causal overdetermination,* which holds that mental events have *both* physical *and* nonphysical causes, with each type of cause being sufficient to produce mental events; and *epiphenomenalism,* which holds that mental events are secondary, nonphysical phenomena that are caused by physical events but have no causal power themselves. Carruthers concludes by pointing out that his mind-brain identity theory does not *reduce* mental events

to brain events, but simply gives a *reductive explanation* of them. His theory does not say that mental events are *nothing but* brain events (reductionism); it simply says that a particular mental event is *constituted by* a particular brain event (a reductive explanation of that mental event), without making the further claim that a certain type of brain event *always* constitutes a certain type mental event, or that we can *deduce* a particular mental event from a particular brain event.

1. ARGUMENTS FOR MIND-BRAIN IDENTITY

[Introduction]

What the thesis of mind-brain identity affirms is that descriptions of our mental states, on the one hand, and some descriptions of our brain states, on the other, are in fact descriptions of the very same things. It holds that just as a particular cloud is, as a matter of fact, a great many water droplets suspended close together in the atmosphere; and just as a flash of lightning is, as a matter of fact, a certain sort of discharge of electrical energy; so a pain or a thought is (is identical with) some state of the brain or central nervous system.

The identity-thesis is a version of physicalism: It holds that all mental states and events are in fact physical states and events. But it is not, of course, a thesis about meaning: It does not claim that words such as "pain" and "afterimage" may be *analyzed* or *defined* in terms of descriptions of brain processes. (That would be absurd.) Rather, it is an empirical thesis about the things in the world to which our words refer: It holds that the ways of thinking represented by our terms for conscious states, and the ways of thinking represented by some of our terms for brain states, are in fact different ways of thinking of the very same (physical) states and events. So "pain" doesn't *mean* "such-and-such a stimulation of the neural fibers" (just as "lightning" doesn't *mean* "such-and-such a discharge of electricity"); yet, for all that, the two terms in fact refer to the very same thing.

In this section a number of arguments in support of mind-brain identity will be set out and discussed. All of these arguments are broadly empirical ones, drawing on our beliefs about the causal order of the world, and our place within it.

1.1. The Closure of Physics and the Unity of Nature

Almost everyone believes that mind and matter interact causally with one another. For example, stimulation of our sense organs causes conscious experiences, and decisions cause bodily movements. . . .

One of the main objections to dualism has always been the difficulty of making sense of causal connections between mind and brain. . . . Now, there isn't any problem of *principle* in understanding causal connections between physical and nonphysical realms. For there is nothing in the concept of causation, as such, that requires all that causes be mediated by physical

mechanisms. The real problem is to understand *how* such causation can occur, given what we already know or believe about the physical world, and about causation in the brain.

Consider, first, the physical world in general. Most scientists now believe that *physics is closed*, in the sense of permitting no interference from, or causation by, events at higher levels of description (for example, chemical or biological). On this view, all atomic and subatomic events happen in accordance with physical laws (albeit probabilistic ones), and all events at higher, more abstract, levels of description must be *realized* in, or *constituted* by, those physical processes in such a way as to allow no independent point of causal leverage. So while there may be chemical and biological laws, the events that figure in these laws must always, at the same time fall under the laws of physics.

On this conception, there is simply *no room* for a distinct and independent psychological level of nature, whose events are not physically constituted, but that can have an impact upon the physical behavior of the body. For in order for such a thing to be possible, it would have to be the case that nonphysical mental events could have an impact on causal sequences at the physical level. But this would conflict with the causal closure of physics—it would mean that some physical events would be caused, not by other physical events or processes, but rather by nonphysical mental events.

What reason do we have for believing in the causal closure of physics? This is not something that can be proved (least of all by thought alone, of course). But for some centuries it has been a successful methodological assumption of scientific inquiry. Scientists work under the assumption that processes in physics brook no interference from higher levels of causation. Whenever they come across physical phenomena that cannot presently be explained in physical terms, instead of postulating causation by *élan vital* (a supposed independent biological life-force), or causation by *ectoplasm* (a supposed independent psychic force), or whatever, they look deeper into the physical mechanisms. In many such cases this deeper look has proved successful; and in all such cases physicalistic scientific inquiries continue to make progress. This gives us good reason to think that the scientific methodology is correct, and that physics is indeed closed.

Closely related to the principle of the causal closure of physics is the principle of the *unity of nature*. On this conception, nature is *layered* into a unitary system of laws and patterns of causal organization, with the processes in any given layer being realized in the one below it. The bottom layer is fundamental physics, which *realizes* (or *constitutes*) all the rest. Chemical laws and processes are realized in those of atomic physics, biochemical processes are constituted by those of molecular chemistry, biological and neurological processes are realized in those of biochemistry, and so on. In accordance with this layered picture of nature, we should expect the principles and processes of human psychology—or the "laws" of operation of the human mind—to be realized in those of neurology. That is to say, we should expect mental events to be constituted by physical events in the brain.

The basic reason for believing in the unity of nature (like our reason for believing in the closure of physics) is that it is a highly successful working methodological assumption of much scientific inquiry. Although scientists are concerned to discover the laws and principles that operate at any given level of

organization in nature—biological, say—it is also an important goal of science to try to understand how those same laws might be *constituted* or *realized* by patternings of events at lower levels. They seek to understand how the right sequences of events at the lower level—that of biochemistry, say—would give rise to the patterns observed at the higher one. (When successful, the result is a *reductive explanation* of the higher-level phenomenon. The difference between *reduction* and *reductive explanation* is discussed in Section 2.2.) This methodological assumption, too, has proved immensely successful, giving us reason to believe that mental processes will somehow be constituted by processes in the brain.

These arguments may be summarized as follows:

(1) It is a successful methodological assumption of science that nonphysical events cannot cause physical ones. *(The closure of physics.)*
(2) It is a successful methodological assumption of science that higher-level events and processes in nature must be realized in lower-level (ultimately physical) ones. *(The unity of nature.)*
(3) So we have reason to think that mental events must be realized in physical ones, probably in physical events in the brain.

The argument is broadly inductive[1] in form, since it projects forward from the success of assumptions made by scientists in the past to a new case. But it seems none the worse for that. . . .

1.2. The Argument from Causation in the Brain

Now consider, more particularly, what we believe about the nature of the causal processes that take place in the human brain. There is still much to learn about the brain—about the functions and interactions of its parts, for example. But much is already known. It is known that the brain consists of nerve cells, of various known types. Much is known about how such cells function and the physical causes that lead to their activity. Certainly there appear to be no "inverse causal black holes" in the brain, such as would seem to be required by the interactionist[2] picture. (That is, there are no places in the brain where brain activity begins to occur *for no physical reason.*) Indeed, I claim that enough is already known about the brain to justify the following principle: *Each event in the brain has a sufficient physical cause.* . . .

[Most of us] believe very firmly that some mental states and events are causally necessary for the occurrence of some physical ones. For example, I believe that if I had not been conscious of a pain in my foot (mental event), I would not have gone to the doctor (physical event). My awareness of the pain was, I believe, a causally necessary condition of my later visit to the doctor. But as we noted above, it seems most unlikely that we shall ever need to advert

---

[1] An *inductive argument* is one that claims to lead from the premises (the statements used to establish the conclusion) to the conclusion in a *probable* way (contrasted with a *deductive argument*, which claims to lead from the premises to the conclusion in a *necessary* way). [D. C. ABEL]

[2] *interactionist:* relating to *interactionism*, the doctrine that the mind and body causally interact; also called *interactive dualism.* [D. C. ABEL]

to anything other than physical-to-physical causality when we investigate the detailed causal nexus behind any given bodily movement. On the contrary, it seems likely that there will always be physical events providing us with a sufficient causal explanation of the brain events giving rise to any particular bodily movement. For example, as we trace the causes of my legs moving me in the direction of the doctor's surgery,[3] through events in the muscles of my legs and feet, through events in the nerves of my spinal column, into events in the cells of my brain, it seems most unlikely that the chain of physical causation will eventually run out. Indeed, according to the principle set out above, we already know enough about causation in the brain to know that it won't. So we shall never be forced to appeal to any nonphysical event in order to provide a satisfactory causal explanation of the movements leading to my visit to the surgery.

Now the only way in which we can hold onto both beliefs—the belief that some mental events are causally necessary for the occurrence of some physical ones, and the belief that it is unnecessary to appeal to anything other than physical events in providing causal explanations of brain events—is by believing that some mental events *are* physical ones. Then somewhere in the chain of physical causes of my visit to the doctor there will be a brain event that is (is identical with) my awareness of a sensation of pain.

This argument for the general truth of the mind-brain identity thesis may be summarized as follows:

(1) Some mental states and events are causally necessary for the occurrence of some physical ones.
(2) In a completed neurophysiological science there will be no need to advert to anything other than physical-to-physical causality in the brain.
(3) So some mental states and events are (are identical with) physical (brain) states and events.

The argument is valid.[4] Although its conclusion only claims that *some* mental states are physical, it can easily be developed in such a way as to entail the stronger conclusion that *all* are. For almost every kind of mental state can sometimes be causally necessary for a physical one, we think. Sometimes a particular bodily movement would not have taken place if I had not made a particular decision; or if I had not entertained a particular thought; or if I had not been aware of a particular sensation; or if I had not had a particular afterimage; and so on. Then since it seems extremely unlikely that some mental states are physical while some are not, it follows that all are.

1.3. Causal Overdetermination

An interactive dualist[5] may try to get around the difficulty by appealing to the notion of "causal overdetermination." Very roughly, this is the idea that an event may have more causes than are necessary. For example, imagine someone being

---

[3] *surgery:* the room in a medical facility where patients are seen. [D. C. ABEL]
[4] *valid:* A deductive argument (see footnote 1) is *valid* when the conclusion follows necessarily from the premises, whether or not the premises are true. [D. C. ABEL]
[5] *interactive dualist:* See footnote 2. [D. C. ABEL]

shot by a firing squad, each member of which has a loaded gun (contrary to normal practice). Suppose that every soldier's aim is true, that all fire at the same time, and that every bullet strikes the heart. Then it is true of every soldier, that even if the others had not fired, his action would still have caused the prisoner's death. (Each shot individually is causally sufficient for death.) But it is also true of every soldier, that even if he himself had *not* fired, the prisoner's death would still have been caused by the others. (No shot individually is causally necessary for death.) Similarly then, the dualist may propose that brain events are caused *both* by prior brain events (so the chain of physical causes is unbroken) *and* by prior mental events—where either type of event on its own is sufficient to produce the effect, but neither type of event on its own is necessary.

So we have: Each shot is *causally sufficient* for death, in that death will follow from it in the circumstances, even if the other shots aren't fired; but no shot is (individually) *causally necessary*, since even if it isn't fired, death will still be caused by the other shots. Perhaps, similarly, the events in the brain that cause bodily movements are caused *both* by earlier brain events *and* by certain mental events, such as a decision. . . .

By deploying the thesis of causal overdetermination, a dualist can hold onto one aspect of our commonsense beliefs in face of the likely discovery of unbroken causal chains of brain events—namely, the belief that our decisions are sometimes, in the circumstances, *sufficient* to bring about a bodily movement. Yet one aspect of common sense would still have to be given up—namely, the belief that a decision is sometimes causally *necessary* for a bodily movement to occur.

People who take the overdetermination view can believe the following: Given that a subject is sitting at a keyboard and decides to start typing, then this is, in the circumstances, sufficient for typing to begin. But they can no longer claim that had the subject *not* decided in that way, then the bodily movement wouldn't have taken place. On the contrary, it would still have occurred, brought about by its other cause: a particular brain event. But are we really prepared to give up this belief? Don't I believe, almost as firmly as I believe anything, that if I had not decided to write this book (mental event) I would not now be typing at this keyboard (physical event)?

How, then, can a dualist explain the fact that decisions are causally necessary *and* sufficient for bodily movements, consistent with our beliefs about the brain?

1.4. Epiphenomenalism

One suggestion is that we should give up believing that our decisions make any real causal difference. Rather, those decisions are mere *epiphenomena*,[6] produced as a by-product by the brain events that are the true causes of our actions.

An attractive feature of this account is that it can explain how we come to be under the *illusion* of agency, falsely believing that our decisions are *causally* necessary and sufficient for some of our movements. For a given mental event will,

---

[6]*epiphenomena:* secondary phenomena (in this case, mental events) that are caused by and accompany primary phenomena (in this case, brain events) but have no causal power themselves. [D. C ABEL]

on this account, be *noncausally* necessary and sufficient for a given movement, since each of them has a common cause. In fact the epiphenomenalist-dualist can claim that each mental event will be correlated with a particular brain event as a matter of causal necessity, in which case it will be causally impossible for the mental event to occur without the corresponding brain event occurring.

So, given that the mental event occurs, then so too must the action occur that is caused by the underlying brain event. (That is to say, the mental event is noncausally sufficient for the occurrence of the action.) And if the mental event *hadn't* occurred, then that would mean that the brain event hadn't occurred either, and so nor would the movement happen. (That is to say, the mental event is noncausally necessary for the occurrence of the action.) On this account, then, it will be *true* that if I hadn't decided to write this book, I wouldn't now be typing. For the only way in which I could have failed to take that decision would have been if the corresponding brain event had failed to occur; and if that had failed to occur, then the bodily movement wouldn't have been caused.

Compare the froth on the wave that breaks a sand castle on the beach. Supposing that it is a law of nature that breaking waves produce froth on their leading edge, then we can say this: If the froth had not been there, the sand castle wouldn't have been broken; and given that the froth is there, the sand castle must be broken shortly thereafter. But it isn't really the froth that causes the sand castle to break; rather, it is the wave that causes *both* the frothing *and* the breaking.

Similarly we can say: If I hadn't decided to type, then I wouldn't now be typing. (This is because, if the event of my deciding hadn't occurred, then that would have been because the brain event that caused my movement hadn't occurred.) And we can say: Given that I decide to type, in the circumstances, then typing occurs. (This is because, if the decision to type occurs, then that will have been caused by the brain event that causes the relevant movements.) But my decision won't be the true cause of my typing, any more than the froth on the wave is the true cause of the sand castle breaking.

Although a theory of this sort can save our belief that certain of our bodily movements wouldn't have occurred if certain decisions hadn't been taken, it does so at the cost of explanatory redundancy. For the decision is no longer part of the true causal explanation of why the bodily movement took place. To say that our decisions are causally correlated with the events that cause our bodily movements, isn't the same as saying (what we intuitively believe) that our decisions themselves constitute the true causal explanations of our actions.

It seems that epiphenomenalism must conflict with our commonsense belief in the reality of agency—it conflicts with our belief that our decisions can make a causal difference to what we do. But another reason why epiphenomenalism is unacceptable is that, if it were true, it would remain a complete mystery why our decisions should march so neatly in step with our actions. Why is it that the brain event that causes me to sit down to type *also* causes me to think "Now I will begin typing"? For, by hypothesis, it wouldn't have made the slightest bit of difference if that brain event had caused me to think instead "Now I'll go swimming."

How would the underlying causal properties of the brain ever have evolved, for example? What would be the [evolutionary] advantage if the brain

event that causes my arm to go up also causes me to decide "Now I shall raise my arm"? For, by hypothesis, the latter has no causal effects in its own right. What difference would it have made if the brain event had caused me to decide "Now I shall open my mouth" or "Now I shall sit down" instead? It would seem to be a quite remarkable cosmic coincidence that the evolutionary processes that caused our brains to have their causal powers in respect of bodily movement, *also* led them to cause content-relevant mental events. Then since it is good explanatory practice to minimize miracles, we have good reason to reject epiphenomenalism and to endorse the thesis of mind-brain identity instead.

1.5. Mind-Brain Identity

In fact our belief in the reality of agency (that is, our belief that our decisions are often part of the true causal explanation of our actions) is very deeply held. If we are to give it up, then there had better be some powerful arguments for dualism to force us to do so. But in fact . . . there are none. The only remaining picture of the relation between mind and brain, then, is one of *identity*. . . . On this account, decisions are part of the true causal explanations of actions, because they are none other than (they are strictly identical to) the brain events that cause those actions.

The main argument for the thesis of mind-brain identity, then, can be represented as follows:

(1) Our bodily movements are caused by brain events.
(2) Each event in the brain has a sufficient physical cause.
(3) Our decisions are sometimes necessary conditions for some of our movements.
(4) Our decisions sometimes form part of the true causal explanation of some of our movements.
(5) So decisions *are* brain events.

Premises (1) and (2) are intended to rule out classic interactive dualism, premise (3) rejects causal overdetermination, and premise (4) rules out epiphenomenalism—thus leaving physicalism as the only remaining possibility.

Premise (1) seems undeniable in the light of modern scientific knowledge. Premise (2) also seems sufficiently well-supported, given what is known about causal processes in the brain. Premises (3) and (4) form an important part of our commonsense view of ourselves and the world. We believe that mental processes can make a difference to the world. Then the only way in which we can hold on to this belief, together with the other premises, is to endorse the conclusion, which is the identity thesis (or at least a limited version of it; see below). The argument as a whole seems rationally convincing in the absence of evidence to the contrary.

Here, as previously, it should be easy to extend the argument to justify the physical nature of *all* mental states, and not just decisions. This is because any mental state can play a part in causing a decision. I sometimes take a decision because of what I see, or what I feel, or what I want, or what I think—in which case these states, too, will form part of the true causal explanation of my action, and the same argument will lead to the conclusion that they, too, are physical. . . .

2. RAMIFICATIONS: TYPES, TOKENS . . .

In this section we will first clarify the thesis of mind-brain identity, distinguishing between two different versions of it, and relating it to different varieties of reductionism in general. . . .

2.1. Type- versus Token-Identity

There is an important distinction to be drawn between *type-identity* and *token-identity*. The thesis of mind-brain *type*-identity holds that each general type of mental state—for instance, sensations of red, or pains in general—is identical with some general type of brain state. So whenever a pain is felt it will be identical with a particular instance of some general type of brain state, the same type of brain state in each case. The thesis of mind-brain *token*-identity is much weaker. It holds only that each particular instance of pain is identical with some particular brain state, those brain states perhaps belonging to distinct kinds. It holds that each particular occurrence of a mental state will be identical with some particular occurrence of a brain state, but that there may be no general identities between types of mental state and types of brain state. Note that the arguments for the identity-thesis that we sketched above are indifferent between these two versions of it.

There is some reason to think that the thesis of mind-brain token-identity is the better theory. One argument would be this: We know that there is a considerable degree of plasticity in the human brain. For instance, although speech is normally controlled from a particular region in the left hemisphere, someone who has had that region damaged (especially when young) can sometimes recover the ability to speak, with practice. So a particular decision to speak may sometimes be identical with an event in one part of the brain, while sometimes it may be identical with an event in quite a different part. Now it doesn't immediately follow from this that the brain events are of different types; this will depend upon what counts as a "type" of brain event. But there seems at least no particular reason to *assume* that the events will all be of the same type.

The case can be made even stronger if we recall that many creatures besides human beings can possess mental states. If not only mammals, birds, and reptiles, but perhaps also nonbiological systems such as robot-computers can possess mental states, then it is obviously false that there will always be the same one type of physical state in existence whenever there exists an instance of a given type of mental state. For the physical control-structures of these creatures will be very different from one another, and from the structure of the human brain. . . .

2.2. Reduction versus Reductive Explanation

Does the thesis of mind-brain identity commit us to *reducing* the mind to the brain? Are we required to say that the human mind is *nothing but* the activity of neurons and groups of neurons? The answer to these questions is negative, in fact. For a distinction closely related to the one just drawn between type and token

identity is the distinction between *reduction* (of properties), on the one hand, and *reductive explanation* (of tokens), on the other. We need only be committed to the latter. Let me explain.

Most philosophers and scientists today are physicalists. They believe that all things, events, and processes in the natural world are, at bottom, physical things, events, and processes. But few are *type*-physicalists, in the sense explained in Section 2.1 above. Few believe that higher-level properties in chemistry, biology, and psychology, for example, will line up type-for-type with properties in fundamental physics. On the contrary, most believe that the special sciences (chemistry, biology, and the rest) are, in a sense, *autonomous*—dealing with laws and properties that cannot be reduced directly to those of physics (or indeed to any other science).[7] . . .

What we do regularly find in science . . . is reductive *explanation*. A given higher-level process—in biology, say—is reductively explained when we can show that suitable lower-level event-sequences, happening in accordance with lower-level laws, are sufficient to *realize*, or *constitute*, the higher-level process in question. To put the same point rather differently: A successful reductive explanation shows how a particular instantiation (or type of instantiation) of a higher-level property is constituted by some lower-level property or process. But it does so without reducing the higher-level property as such, since there may be no lower-level process-type that is *always* instantiated whenever the higher-level property is instantiated.

Most physicalists believe in the unity of science, in the sense that they expect all higher-level properties and processes to be reductively explicable in principle. They think that it must be possible, in the end, to show how any higher-level property or process (of biology, psychology, or whatever) is realized in—or constituted by—some lower-level property or process (and ultimately by processes in fundamental physics). It must be possible to take a particular occurrence of a higher-level property and show how, on at least that occasion, it was constituted by some lower-level physical property or process. But physicalists don't have to say that biology is *nothing but* chemistry, or that chemistry is *nothing but* quantum mechanics.

It is thus possible to be a physicalist about the mind, while at the same time believing in the reality and irreducibility of mental properties. . . . While in one sense the mind is *nothing but* the operation of the brain, for a physicalist—since each token mental state will be none other than some token brain state—it may still be the case that if we want to understand the operations of minds in general, we shall unavoidably have to couch our explanations in terms of mental properties; just as if we want to understand the operations of wings in general, we cannot appeal to the specific physical structures of specific wings.

---

[7]In other words, few philosophers and scientists believe that any particular type of lower-level property (for example, a property studied by physics, the lowest-level science) will necessarily always produce a particular type of higher-level property (for example, a property studied by psychology). Most philosophers (including Carruthers) and scientists believe that a higher-level science is *autonomous* in the sense that its laws cannot be *deduced* from the laws of a lower-level science. In this sense, it is false that mental events (studied by psychology) can be reduced to (are *nothing but*) brain events (studied by neurology, and ultimately by physics). [D. C. ABEL]