1.1

René Descartes (1596–1650) The Passions of the Soul (1649)

Part First: Of the Passions in General, and Incidentally of the Whole Nature of Man

Descartes lived in a time when European civilization began to change rapidly, when many of the cultural and scientific foundations of the modern world were laid. Shakespeare, Cervantes, Monteverdi, and Molière; Galileo, Kepler, Bacon, and Hobbes were a few of Descartes' contemporaries. European powers were expanding rapidly overseas. Most significant, perhaps, for understanding Descartes is the fact that this was a time when science was beginning to show its power to explore the mysteries of the natural world and when the Church was beginning to lose its power to control those mysteries. As an example, consider the earth and the sun.

In 1500 the geocentric (earth at the center) universe was not only the scientific state of the art, it was the dogma of the Roman Catholic church. In the early 16th century, the Polish astronomer Nicolas Copernicus convinced himself that the geocentric description of the world was incorrect and proposed a heliocentric (sun at the center) description. Early in the 17th century the German astronomer Johannes Kepler improved Copernicus's system by replacing his circular planetary orbits with elliptical ones. The Copernican system was gaining ground, and in 1616 the Church banned it. In 1632 Galileo published a work for the lay reader supporting the Copernican system; in 1633 he was tried by the Inquisition, forced to recant his belief in the heliocentric theory, and put under house arrest. (Luckily, his conviction was annulled in 1979 and the ban on the Copernican theory was lifted in 1992.)

Although it was unable to contain the Copernican system, the Church was still quite prepared to persecute heretics. This threat was not lost on Descartes, and as a result he delayed or refrained from publishing certain things and published others anonymously, even though

Source: Descartes, R. (1975). *The philosophical works of Descartes* (Vol. 1, E. S. Haldane & G. R. T. Ross, Trans.). London: Cambridge University Press.

he lived much of his life in voluntary exile on Holland's Protestant soil. It is clear that Descartes had no wish to share Galileo's fate. Perhaps he might have done more had he been less cowed by the Church, but even so Descartes' achievements are astonishing. His invention of analytic geometry assures his place among the great mathematicians, and while his philosophical contributions have not held up as well, his influence and historical significance cannot be overstated.

One of the boldest ideas in the history of philosophy is Descartes' suggestion that to know what is true, and only what is true, we should try to doubt everything we believe. That which can be doubted is not necessarily false, but that which cannot be doubted must be true. In his first published work, the *Discourse on the Method of Rightly Conducting the Reason and Seeking for Truth in the Sciences* (1637), Descartes applied this method of doubt to his own beliefs and arrived at a very important (and famous) result, summarized in the phrase usually translated as *I think, therefore I am.* This doesn't mean that thinking is the cause of existence; Descartes' point is that thinking is *evidence* of existence. Here is the argument:

> I had noticed long before, as I said just now, that in conduct one sometimes has to follow opinions that one knows to be most uncertain just as if they were indubitable; but since my present aim was to give myself up to the pursuit of truth alone, I thought I must do the very opposite, and reject as if absolutely false anything as to which I could imagine the least doubt, in order to see if I should not be left at the end believing something that was absolutely indubitable. So because our senses sometimes deceive us, I chose to suppose that nothing was such as they lead us to imagine. Because there are men who make mistakes in reasoning even as regards the simplest points of geometry and perpetrate fallacies, and seeing that I was as liable to error as anyone else, I rejected as false all the arguments I had so far taken for demonstrations. Finally, considering that the very same experiences [thoughts] as we have in waking life may occur also while we sleep, without there being at that time any truth in them, I decided to feign that everything that had entered my mind hitherto was no more true than the illusions of dreams. But immediately upon this I noticed that while I was trying to think everything false, it must needs be that I, who was thinking this, was something. And observing that this truth 'I am thinking, therefore I exist' was so solid and secure that the most extravagant suppositions of the sceptics could not overthrow it, I judged that I need not scruple to accept it as the first principle of philosophy that I was seeking. (Descartes 1954, Part 4)

The discovery that he can doubt everything but his own consciousness leads Descartes to divide the world into "thinking substance"—mind—and "extended substance"—body. One of the deepest issues raised by Descartes' distinction between mind and body was identified by Princess Elizabeth of Bohemia, Descartes' friend and philosophical correspondent. If the mind is an immaterial "thinking substance," she asked, how does the mind cause the body to move?

> For it seems that all determination of movement takes place by the propulsion of the thing moved, by the manner in which it is propelled by that which moves it, and by the qualification and shape of the surface of this latter. Contact is required for the first two conditions and extension for the third. You yourself entirely exclude extension from the

> notion you have of mind, and a touching seems to me incompatible with an immaterial thing. (Descartes 1958, letter of May 16, 1643)

Descartes' reply begins as follows:

> I can truthfully say that this question which your Highness proposes seems to me to be the question which above all others can most reasonably be raised, in sequel to [what I have said in] my published writings. For there are two things in the human soul upon which all the knowledge we can have of its nature depends, on the one hand that it thinks, and on the other that being united to the body it can act and suffer along with the body. I have said [in the *Meditations*] almost nothing of this latter, and have studiously set myself to expound only the former. The reason for my doing so is that inasmuch as my principal design was to prove the distinction subsisting between mind and body, the former could serve in this design, whereas the other, if dwelt on, would have been by no means helpful. But as your Highness is so clear-seeing that there is no concealing anything from her, I shall here endeavor to explain the manner in which I conceive the union of mind and body, and how the mind has the power of moving the body. (Descartes 1958, letter of May 31, 1643)

Descartes did not accomplish this endeavor to the princess's satisfaction in this letter, nor in the next. The effort led to *The Passions of the Soul,* a draft of which Descartes sent to Elizabeth in 1646. In 1647, alas, Descartes sent another copy of the draft to Queen Christina of Sweden, who invited Descartes to Stockholm in 1649, shortly before *The Passions* appeared in print. Descartes' life at court included philosophy lessons for the queen at five o'clock in the morning. After a few months of this regimen, Descartes died of pneumonia on February 11, 1650.

Nowhere in *The Passions* (or anywhere else) does Descartes succeed in explaining "the union of mind and body." Along the way, however, he has much to say about the functional distinction between what we call mind and what we call body, and he develops interesting and important ideas about the nature of the nervous system and about sensation and perception.

Descartes uses *passion* to refer not only to powerful emotion but also, and more importantly, to that which is received or undergone; *passion* is from the same root as *passive*.

For example, if A touches B, in Descartes' terminology A is the agent, B is the recipient, and the touch is both an action (for A) and a passion (for B).

1. That what in respect of a subject is passion, is in some other regard always action.

. . . [T]o begin with, I consider that all that which occurs or that happens anew, is by the philosophers, generally speaking, termed a passion, in as far as the subject to which it occurs is concerned, and an action in respect of him who causes it to occur. Thus although the agent and the recipient [patient] are frequently very different, the action and the passion are always one and the same thing, although having different names, because of the two diverse subjects to which it may be related.

2. That in order to understand the passions of the soul its functions must be distinguished from those of body.

Next I note also that we do not observe the existence of any subject which more immediately acts upon our soul than the body to which it is joined, and that we must consequently consider that what in the soul is a passion is in the body commonly speaking an action; so that there is no better means of arriving at a knowledge of our passions than to examine the difference which exists between soul and body in order to know to which of the two we must attribute each one of the functions which are within us.

subject: As Descartes indicates in the previous paragraph, *subject* can refer to either the agent or recipient of an action. Here he means *agent*.

3. What rule we must follow to bring about this result.

As to this we shall not find much difficulty if we realise that all that we experience as being in us, and that to observation may exist in wholly inanimate bodies, must be attributed to our body alone; and, on the other hand, that all that which is in us and which we cannot in any way conceive as possibly pertaining to a body, must be attributed to our soul.

4. That the heat and movement of the members proceed from the body, the thoughts from the soul.

Thus because we have no conception of the body as thinking in any way, we have reason to believe that every kind of thought which exists in us belongs to the soul; and because we do not doubt there being inanimate bodies which can move in as many as or in more diverse modes than can ours, and which have as much heat or more (experience demonstrates this to us in flame, which of itself has much more heat and movement than any of our members), we must believe that all the heat and all the

movements which are in us pertain only to body, inasmuch as they do not depend on thought at all.

5. That it is an error to believe that the soul supplies the movement and heat to body.

   By this means we shall avoid a very considerable error into which many have fallen; so much so that I am of opinion that this is the primary cause which has prevented our being able hitherto satisfactorily to explain the passions and the other properties of the soul. It arises from the fact that from observing that all dead bodies are devoid of heat and consequently of movement, it has been thought that it was the absence of soul which caused these movements and this heat to cease; and thus, without any reason, it was thought that our natural heat and all the movements of our body depend on the soul: while in fact we ought on the contrary to believe that the soul quits us on death only because this heat ceases, and the organs which serve to move the body disintegrate.

6. The difference that exists between a living body and a dead body.

   In order, then, that we may avoid this error, let us consider that death never comes to pass by reason of the soul, but only because some one of the principal parts of the body decays; and we may judge that the body of a living man differs from that of a dead man just as does a watch or other automaton (i.e. a machine that moves of itself), when it is wound up and contains in itself the corporeal principle of those movements for which it is designed along with all that is requisite for its action, from the same watch or other machine when it is broken and when the principle of its movement ceases to act.

7. A brief explanation of the parts of the body and some of its functions.

   In order to render this more intelligible, I shall here explain in a few words the whole method in which the bodily machine is composed. . . . We further know that all the movements of the members depend on the muscles, and that these muscles are so mutually related one to another that when the one is contracted it draws toward itself the part of the body to which it is attached, which causes the opposite muscle at the same time to become elongated; then if at another time it happens that this last contracts, it causes the former to become elongated and it draws back to itself the part to which they are attached. We know finally that all these movements of the muscles, as also all the senses, depend on the nerves, which resemble small filaments, or little tubes, which all proceed from the brain, and thus contain like it a certain very subtle air or wind which is called the animal spirits.

Descartes' vagueness about the animal spirits is not surprising considering that they are purely hypothetical entities. They seem to be a fluid, consisting of extremely fine particles, distilled from the blood. *Animal* is used in the sense of "of the soul," and *spirit* comes from a root meaning "breath."

8. What is the principle of all these functions?

But it is not usually known in what way these animal spirits and these nerves contribute to the movements and to the senses, nor what is the corporeal principle which causes them to act. That is why, although I have already made some mention of them in my other writings, I shall not here omit to say shortly that so long as we live there is a continual heat in our heart, which is a species of fire which the blood of the veins there maintains, and that this fire is the corporeal principle of all the movements of our members. . . .

corporeal principle: that is, the part of the body that is ultimately responsible for movement

9. How the animal spirits are produced in the brain.

But what is here most worthy of remark is that all the most animated and subtle portions of the blood which the heat has rarefied in the heart, enter ceaselessly in large quantities into the cavities of the brain. And the reason which causes them to go there rather than elsewhere, is that all the blood which issues from the heart by the great artery takes its course in a straight line towards that place, and not being able to enter it in its entirety, because there are only very narrow passages there, those of its parts which are the most agitated and the most subtle alone pass through, while the rest spreads abroad in all the other portions of the body. But these very subtle parts of the blood form the animal spirits; and for this end they have no need to experience any other change in the brain, unless it be that they are separated from the other less subtle portions of the blood; for what I here name spirits are nothing but material bodies and their one peculiarity is that they are bodies of extreme minuteness and that they move very quickly like the particles of the flame which issues from a torch. Thus it is that they never remain at rest in any spot, and just as some of them enter into the cavities of the brain, others issue forth by the pores which are in its substance, which pores conduct them into the nerves, and from there into the muscles, by means of which they move the body in all the different ways in which it can be moved.

subtle: very small; fine

10. How the movements of the muscles take place.

For the sole cause of all the movements of the members is that certain muscles contract, and that those opposite to them elongate, as has already been said; and the sole cause of one muscle contracting rather than that set against it, is that there comes from the brain some additional amount of animal spirits, however little it may be, to it rather than to the other. Not that the spirits which proceed immediately from the brain suffice in themselves to move the muscles, but they determine the other spirits which are already in these two muscles, all to issue very quickly from the one of them and to pass into the other. By this means that from which they issue becomes longer and more flaccid, and

that into which they enter, being rapidly distended by them, contracts, and pulls the member to which it is attached. . . .

11. How outside objects act upon the organs of the senses.

We have still to understand the reasons why the spirits do not flow always from the brain into the muscles in the same fashion, and why occasionally more flow towards some than towards others. For in addition to the action of the soul which is truly in our case one of these causes, as I shall subsequently explain, there are two others which depend only on the body, and of these we must speak. The first consists in the diversity of movements which are excited in the organs of sense by their objects, and this I have already explained fully enough in the Dioptric; but in order that those who see this work may not be necessitated to read others, I shall here repeat that there are three things to consider in respect of the nerves, i.e. first of all their marrow or interior substance, which extends in the form of little filaments from the brain, from which it originates, to the extremities of the other members to which these filaments are attached; secondly the membranes which surround them, and which, being conterminous with those which envelope the brain, form the little tubes in which these little filaments are enclosed; and finally the animal spirits which, being carried by these same tubes from the brain to the muscles, are the reason of these filaments remaining there perfectly free and extended, so that the least thing that moves the part of the body to which the extremity of any one of them is attached, causes by that same means the part of the brain from which it proceeds to move, just as when one draws one end of a cord the other end is made to move.

Dioptric: Optics; published with the *Discourse on Method* in 1637. Much of the *Optics* is about vision and is of great psychological interest.

12. That this action of outside objects may lead the spirits into the muscles in diverse ways.

And I have explained in the Dioptric how all the objects of sight communicate themselves to us only through the fact that they move locally by the intermission of transparent bodies which are between them and us, the little filaments of the optic nerves which are at the back of our eyes, and then the parts of the brain from which these nerves proceed; I explained, I repeat, how they move them in as many diverse ways as the diversities which they cause us to see in things, and that it is not immediately the movements which occur in the eye, but those that occur in the brain which represent these objects to the soul. To follow this example, it is easy to conceive how sounds, scents, tastes, heat, pain, hunger, thirst and generally speaking all objects of our other external senses as well as of our internal appetites, also excite some movement in our nerves which by their means pass to the brain; and in addition to the fact that these diverse movements of the brain cause diverse perceptions to become evident to our

Descartes conceived of bodies, but not minds, as machines because of the automatic quality of reflexes such as the one he is describing. The machine of our (human) body is no different from the machine of a dog's body or, for that matter, a fly's.

soul, they can also without it cause the spirits to take their course towards certain muscles rather than towards others, and thus to move our limbs, which I shall prove here by one example only. If someone quickly thrusts his hand against our eyes as if to strike us, even though we know him to be our friend, that he only does it in fun, and that he will take great care not to hurt us, we have all the same trouble in preventing ourselves from closing them; and this shows that it is not by the intervention of our soul that they close, seeing that it is against our will, which is its only, or at least its principal activity; but it is because the machine of our body is so formed that the movement of this hand towards our eyes excites another movement in our brain, which conducts the animal spirits into the muscles which cause the eyelids to close.

. . .

13. How all the members may be moved by the objects of the senses and by the animal spirits without the aid of the soul.

We must finally remark that the machine of our body is so formed that all the changes undergone by the movement of the spirits may cause them to open certain pores in the brain more than others, and reciprocally that when some one of the pores is opened more or less than usual (to however small a degree it may be) by the action of the nerves which are employed by the senses, that changes something in the movement of the spirits and causes them to be conducted into the muscles which serve to move the body in the way in which it is usually moved when such an action takes place. In this way all the movements which we make without our will contributing thereto (as frequently happens when we breathe, walk, eat, and in fact perform all those actions which are common to us and to the brutes), only depend on the conformation of our members, and on the course which the spirits, excited by the heat of the heart, follow naturally in the brain, nerves, and muscles, just as the movements of a watch are produced simply by the strength of the springs and the form of the wheels.

conformation of our members: the arrangement of our limbs

14. What the functions of the soul are.

After having thus considered all the functions which pertain to the body alone, it is easy to recognise that there is nothing in us which we ought to attribute to our soul excepting our thoughts, which are mainly of two sorts, the one being the actions of the soul, and the other its passions. Those which I call its actions are all our desires, because we

find by experience that they proceed directly from our soul, and appear to depend on it alone: while, on the other hand, we may usually term one's passions all those kinds of perception or forms of knowledge which are found in us, because it is often not our soul which makes them what they are, and because it always receives them from the things which are represented by them.

15. Of the Will.

Our desires, again, are of two sorts, of which the one consists of the actions of the soul which terminate in the soul itself, as when we desire to love God, or generally speaking, apply our thoughts to some object which is not material; and the other of the actions which terminate in our body, as when from the simple fact that we have the desire to take a walk, it follows that our legs move and that we walk.

16. Of the Perceptions.

Our perceptions are also of two sorts, and the one have the soul as a cause and the other the body. Those which have the soul as a cause are the perceptions of our desires, and of all the imaginations or other thoughts which depend on them. For it is certain that we cannot desire anything without perceiving by the same means that we desire it; and, although in regard to our soul it is an action to desire something, we may say that it is also one of its passions to perceive that it desires. Yet because this perception and this will are really one and the same thing, the more noble always supplies the denomination, and thus we are not in the habit of calling it a passion, but only an action.

To use Descartes' example, the desire to take a walk is an action of the soul; at the same time the soul's perception of that desire is a passion. In Descartes' view, actions are more noble than passions, so we refer to the desire to take a walk as an action (i.e., will) of the soul.

denomination: name

17. Of the imaginations and other thoughts which are formed by the soul.

When our soul applies itself to imagine something which does not exist, as when it represents to itself an enchanted palace or a chimera, and also when it applies itself to consider something which is only intelligible and not imaginable, e.g. to consider its own nature, the perceptions which it has of these things depend principally on the act of will which causes it to perceive them. That is why we usually consider them as actions rather than passions.

chimera (ky-MERE-uh): fanciful or imaginary. The chimera was a fire-breathing monster of Greek mythology, depicted as a composite of several animals.

18. Of the imaginations which have the body only as a cause.

Amongst the perceptions which are caused by the body, the most part depend on the nerves; but there are also some which do not depend on them, and which we name imaginations, such as those of which I have just spoken, from which they yet differ inasmuch as our will has no part in forming them; and this brings it to pass that they cannot be placed in the number of the actions of the soul. And they only proceed from the fact that the spirits being agitated in diverse ways and meeting with traces of diverse preceding impressions which have been effected in the brain, take their course there fortuitously by certain pores rather than by others. Such are the illusions of our dreams, and also the day-dreams which we often have when awake, and when our thought wanders aimlessly without applying itself to anything of its own accord. But, although some of these imaginations are the passions of the soul, taking this word in its most correct and perfect significance, and since they may all be thus termed if we take it in a more general significance, yet, because they have not a cause of so notable and determinate a description as the perceptions which the soul receives by the intermission of the nerves, and because they appear to be only a shadow and a picture, we must, before we can distinguish them very well, consider the difference prevailing among these others.

A modern version of this theory of dreams was proposed by Hobson (1988).

19. Of the difference which exists among the other perceptions.

All the perceptions which I have not yet explained come to the soul by the intermission of the nerves, and there is between them this difference, that we relate them in the one case to objects outside which strike our senses, in the other to our soul.

20. Of the perceptions which we relate to objects which are without us.

Those which we relate to the things which are without us, to wit to the objects of our senses, are caused, at least when our opinion is not false, by these objects which, exciting certain movements in the organs of the external senses, excite them also in the brain by the intermission of the nerves, which cause the soul to perceive them. Thus when we see the light of a torch, and hear the sound of a bell, this sound and this light are two different actions which, simply by the fact that they excite two different movements in certain of our nerves, and by these means in the brain, give two different sensations to the soul, which sensations we relate to the subjects which we suppose to be their causes in such a way that we think we see the torch itself and hear the bell, and do not perceive just the movements which proceed from them.

21. Of the perceptions which we relate to our body.

The perceptions which we relate to our body, or to some of its parts, are those which we have of hunger, thirst, and other natural appetites, to which we may unite pain, heat, and

the other affections which we perceive as though they were in our members, and not as in objects which are outside us; we may thus perceive at the same time and by the intermission of the same nerves, the cold of our hand and the heat of the flame to which it approaches; or, on the other hand, the heat of the hand and the cold of the air to which it is exposed, without there being any difference between the actions which cause us to feel the heat or the cold which is in our hand, and those which make us perceive that which is without us, excepting that from the one of these actions following upon the other, we judge that the first is already in us, and what supervenes is not so yet, but is in the object which causes it.

22. Of the perceptions which we relate to our soul.

The perceptions which we relate solely to the soul are those whose effects we feel as though they were in the soul itself, and as to which we do not usually know any proximate cause to which we may relate them: such are the feelings of joy, anger, and other such sensations, which are sometimes excited in us by the objects which move our nerves and sometimes also by other causes. But, although all our perceptions, both those which we relate to objects which are outside us, and those which we relate to the diverse affections of our body, are truly passions in respect of our soul, when we use this word in its most general significance, yet we are in the habit of restricting it to the signification of those alone which are related to soul itself; and it is only these last which I have here undertaken to explain under the name of the passions of the soul.

23. That the imaginations which only depend on the fortuitous movements of the spirits, may be passions just as truly as the perceptions which depend on the nerves.

It remains for us to notice here that all the same things which the soul perceives by the intermission of the nerves, may also be represented by the fortuitous course of the animal spirits, without there being any other difference excepting that the impressions which come into the brain by the nerves are usually more lively or definite than those excited there by the spirits, which caused me to say in Article XXI that the former resemble the shadow or picture of the latter. We must also notice that it sometimes happens that this picture is so similar to the thing which it represents that we may be mistaken therein regarding the perceptions which relate to objects which are outside us, or at least those which relate to certain parts of our body, but that we cannot be so deceived regarding the passions, inasmuch as they are so close to, and so entirely within our soul, that it is impossible for it to feel them without their being actually such as it feels them to be. Thus often when we sleep, and sometimes even when we are awake, we imagine certain things so forcibly, that we think we see them before us, or feel them in our body, although they do not exist at all; but although we may be asleep, or dream, we cannot feel sad or moved by any other passion without its being very true that the soul actually has this passion within it.

24. The definition of the passions of the soul.

After having considered in what the passions of the soul differ from all its other thoughts, it seems to me that we may define them generally as the perceptions, feelings, or emotions of the soul which we relate specially to it, and which are caused, maintained, and fortified by some movement of the spirits.

25. Explanation of the first part of this definition.

We may call them perceptions when we make use of this word generally to signify all the thoughts which are not actions of the soul, or desires, but not when the term is used only to signify clear cognition; for experience shows us that those who are the most agitated by their passions, are not those who know them best; and that they are of the number of perceptions which the close alliance which exists between the soul and the body, renders confused and obscure. We may also call them feelings because they are received into the soul in the same way as are the objects of our outside senses, and are not otherwise known by it; but we can yet more accurately call them emotions of the soul, not only because the name may be attributed to all the changes which occur in it—that is, in all the diverse thoughts which come to it, but more especially because of all the kinds of thought which it may have, there are no others which so powerfully agitate and disturb it as do these passions.

26. Explanation of the second part.

I add that they particularly relate to the soul, in order to distinguish them from the other feelings which are related, the one to outside objects such as scents, sounds, and colours; the others to our body such as hunger, thirst, and pain. I also add that they are caused, maintained, and fortified by some movement of the spirits, in order to distinguish them from our desires, which we may call emotions of the soul which relate to it, but which are caused by itself; and also in order to explain their ultimate and most proximate cause, which plainly distinguishes them from the other feelings.

27. That the soul is united to all the portions of the body conjointly.

But in order to understand all these things more perfectly, we must know that the soul is really joined to the whole body, and that we cannot, properly speaking, say that it exists in any one of its parts to the exclusion of the others, because it is one and in some manner indivisible, owing to the disposition of its organs, which are so related to one another that when any one of them is removed, that renders the whole body defective; and because it is of a nature which has no relation to extension, nor dimensions, nor other properties of the matter of which the body is composed, but only to the whole conglomerate of its organs, as appears from the fact that we could not in any way conceive of the half or the third of a soul, nor of the space it occupies, and because it does not become smaller owing to the cutting off of some portion of the body, but separates itself from it entirely when the union of its assembled organs is dissolved.

28. That there is a small gland in the brain in which the soul exercises its functions more particularly than in the other parts.

small gland: This is the pineal gland, a small endocrine gland attached to the base of the brain. We now know that it secretes melatonin and is involved in circadian rhythms.

It is likewise necessary to know that although the soul is joined to the whole body, there is yet in that a certain part in which it exercises its functions more particularly than in all the others; and it is usually believed that this part is the brain, or possibly the heart: the brain, because it is with it that the organs of sense are connected, and the heart because it is apparently in it that we experience the passions. But, in examining the matter with care, it seems as though I had clearly ascertained that the part of the body in which the soul exercises its functions immediately is in nowise the heart, nor the whole of the brain, but merely the most inward of all its parts, to wit, a certain very small gland which is situated in the middle of its substance and so suspended above the duct whereby the animal spirits in its anterior cavities have communication with those in the posterior, that the slightest movements which take place in it may alter very greatly the course of these spirits; and reciprocally that the smallest changes which occur in the course of the spirits may do much to change the movements of this gland.

duct: the third ventricle. The ventricles are openings in the brain filled with cerebrospinal fluid. Descartes supposed, not unreasonably, that the function of brain tissue was to regulate the flow of this fluid through the various nerves.

29. How we know that this gland is the main seat of the soul.

The reason which persuades me that the soul cannot have any other seat in all the body than this gland wherein to exercise its functions immediately, is that I reflect that the other parts of our brain are all of them double, just as we have two eyes, two hands, two ears, and finally all the organs of our outside senses are double; and inasmuch as we have but one solitary and simple thought of one particular thing at one and the same moment, it must necessarily be the case that there must somewhere be a place where the two images which come to us by the two eyes, where the two other impressions which proceed from a single object by means of the double organs of the other senses, can unite before arriving at the soul, in order that they may not represent to it two objects instead of one. And it is easy to apprehend how these images or other impressions might unite in this gland by the intermission of the spirits which fill the

It is true that the pineal gland is not "double" in Descartes' sense, but like the brain itself the pineal has a left side and a right side that are mirror images of one another.

cavities of the brain: but there is no other place in the body where they can be thus united unless they are so in this gland.

. . .

30. How the soul and the body act on one another.

Let us then conceive here that the soul has its principal seat in the little gland which exists in the middle of the brain, from whence it radiates forth through all the remainder of the body by means of the animal spirits, nerves, and even the blood, which, participating in the impressions of the spirits, can carry them by the arteries into all the members. And recollecting what has been said above about the machine of our body, i.e. that the little filaments of our nerves are so distributed in all its parts, that on the occasion of the diverse movements which are there excited by sensible objects, they open in diverse ways the pores of the brain, which causes the animal spirits contained in these cavities to enter in diverse ways into the muscles, by which means they can move the members in all the different ways in which they are capable of being moved; and also that all the other causes which are capable of moving the spirits in diverse ways suffice to conduct them into diverse muscles; let us here add that the small gland which is the main seat of the soul is so suspended between the cavities which contain the spirits that it can be moved by them in as many different ways as there are sensible diversities in the object, but that it may also be moved in diverse ways by the soul, whose nature is such that it receives in itself as many diverse impressions, that is to say, that it possesses as many diverse perceptions as there are diverse movements in this gland. Reciprocally, likewise, the machine of the body is so formed that from the simple fact that this gland is diversely moved by the soul, or by such other cause, whatever it is, it thrusts the spirits which surround it towards the pores of the brain, which conduct them by the nerves into the muscles, by which means it causes them to move the limbs.

The role assigned to the blood here would have been inconceivable before William Harvey established the circulation of the blood in 1628.

31. Example of the mode in which the impressions of the objects unite in the gland which is in the middle of the brain.

Thus, for example, if we see some animal approach us, the light reflected from its body depicts two images of it, one in each of our eyes, and these two images form two others, by means of the optic nerves, in the interior surface of the brain which faces its cavities; then from there, by means of the animal spirits with which its cavities are filled, these images so radiate towards the little gland which is surrounded by these spirits, that the movement which forms each point of one of the images tends towards the same point of the gland towards which tends the movement which forms the point of the other image, which represents the same part of this animal. By this means the two images

which are in the brain form but one upon the gland, which, acting immediately upon the soul, causes it to see the form of this animal.

32. Example of the way in which the passions are excited in the soul.

And, besides that, if this figure is very strange and frightful—that is, if it has a close relationship with the things which have been formerly hurtful to the body, that excites the passion of apprehension in the soul and then that of courage, or else that of fear and consternation according to the particular temperament of the body or the strength of the soul, and according as we have to begin with been secured by defence or by flight against the hurtful things to which the present impression is related. For in certain persons that disposes the brain in such a way that the spirits reflected from the image thus formed on the gland, proceed thence to take their places partly in the nerves which serve to turn the back and dispose the legs for flight, and partly in those which so increase or diminish the orifices of the heart, or at least which so agitate the other parts from whence the blood is sent to it, that this blood being there rarefied in a different manner from usual, sends to the brain the spirits which are adapted for the maintenance and strengthening of the passion of fear, i.e. which are adapted to the holding open, or at least reopening, of the pores of the brain which conduct them into the same nerves. For from the fact alone that these spirits enter into these pores, they excite a particular movement in this gland which is instituted by nature in order to cause the soul to be sensible of this passion; and because these pores are principally in relation with the little nerves which serve to contract or enlarge the orifices of the heart, that causes the soul to be sensible of it for the most part as in the heart.

. . .

33. The power of the soul in regard to the body.

But the will is so free in its nature, that it can never be constrained; and of the two sorts of thoughts which I have distinguished in the soul (of which the first are its actions, i.e. its desires, the others its passions, taking this word in its most general significance, which comprises all kinds of perceptions), the former are absolutely in its power, and can only be indirectly changed by the body, while on the other hand the latter depend absolutely on the actions which govern, and direct them, and they can only indirectly be altered by the soul, excepting when it is itself their cause. And the whole action of the soul consists in this, that solely because it desires something, it causes the little gland to which it is closely united to move in the way requisite to produce the effect which relates to this desire.

34. How we find in the memory the things which we desire to remember.

Thus when the soul desires to recollect something, this desire causes the gland, by inclining successively to different sides, to thrust the spirits towards different parts of the brain until they come across that part where the traces left there by the object which we wish

to recollect are found; for these traces are none other than the fact that the pores of the brain, by which the spirits have formerly followed their course because of the presence of this object, have by that means acquired a greater facility than the others in being once more opened by the animal spirits which come towards them in the same way. Thus these spirits in coming in contact with these pores, enter into them more easily than into the others, by which means they excite a special movement in the gland which represents the same object to the soul, and causes it to know that it is this which it desired to remember.

35. How the soul can imagine, be attentive, and move the body.

Thus when we desire to imagine something we have never seen, this desire has the power of causing the gland to move in the manner requisite to drive the spirits towards the pores of the brain by the opening of which pores this particular thing may be represented; thus when we wish to apply our attention for some time to the consideration of one particular object, this desire holds the gland for the time being inclined to the same side. Thus, finally, when we desire to walk or to move our body in some special way, this desire causes the gland to thrust the spirits towards the muscles which serve to bring about this result.

36. That each desire is naturally united to some movement of the gland; but that, by intentional effort or by custom, it may be united to others.

At the same time it is not always the desire to excite in us some movement, or bring about some result which is able so to excite it, for this changes according as nature or custom have diversely united each movement of the gland to each particular thought. Thus, for example, if we wish to adjust our eyes so that they may look at an object very far off, this desire causes their pupils to enlarge; and if we wish to set them to look at an object very near, this desire causes them to contract; but if we think only of enlarging the pupil of the eye we may have the desire indeed, but we cannot for all that enlarge it, because nature has not joined the movement of the gland which serves to thrust forth the spirits towards the optic nerve, in the manner requisite for enlarging or diminishing the pupil, with the desire to enlarge or diminish it, but with that of looking at objects which are far away or near. And when in speaking we think only of the sense of what we desire to say, that causes us to move the tongue and lips much more quickly and much better than if we thought of moving them in all the many ways requisite to utter the same words, inasmuch as the custom which we have acquired in learning to speak, caused us to join the action of the soul (which, by the intermission of the gland can move the tongue and lips), with the significance of words which follow these movements, rather than with the movements themselves.

The adjustment to the eye in this example should be in the shape of the lens rather than the size of the pupil, but this does not affect Descartes' argument.

For Discussion

1. In #3 Descartes refers to "all that we experience as being in us, and that to observation may exist in wholly inanimate bodies." What are some examples?
2. What aspects of Descartes' account of the nervous system seem to agree with our current understanding?
3. In #17–26 Descartes divides our thoughts into actions and passions of the soul. He then divides each of these, and so on. Make a tree diagram to illustrate the classification of mental faculties contained in this passage.
4. How does Descartes account for the fact that we sometimes have perceptions of things that are not in fact present to our senses?
5. Using modern terminology, list the functions of the soul (mind) and the functions of the body (brain) according to Descartes.
6. What are the various functions of the pineal gland, both in Descartes' understanding and in the modern view?