On the Soul

ARISTOTLE

384–322 BC

On the Soul

Περὶ ψυχῆς

Translated from the Greek with AI (Claude) and edited



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INTRODUCTION

What makes something alive? In *On the Soul* (usually known by its Latin title, *De Anima*), Aristotle answers that the soul is not a ghostly thing inside the body but its form: what a living body is and does, as seeing is to the eye.

He surveys what earlier thinkers said about the soul, then works up through its powers: nutrition and growth, which all living things share; perception, which animals add; and thought, which is distinctive of human beings. The famous and puzzling chapter on the intellect that "makes all things" (Book III, chapter 5) has been argued over for two thousand years.

The book is short but dense, and it founded the study of psychology in the West.

Book I

Earlier views
Aristotle sets out the questions about the soul and examines what his predecessors said.

WHY STUDY THE SOUL

Aristotle explains why knowledge of the soul matters and sets out the questions to be answered.

402a Knowledge, we assume, is one of the fine and honorable things, and one kind of knowledge more so than another, either because of its precision or because its objects are better and more wonderful. On both counts we would reasonably place the inquiry into the soul among the first. Knowledge of the soul also seems to contribute greatly to truth as a whole, and above all to the study of nature, since the soul is, as it were, the principle of animals. We seek to study and come to know its nature and its essence, and then whatever belongs to it as attributes. Some of these seem to be affections proper to the soul itself; others seem to belong, because of it, to animals as well. But in every way and in every respect it is among the hardest things to reach any conviction about it.[1] The question is common to many other subjects too—I mean the question about essence and what a thing is. So someone might perhaps think there is a single method for everything whose essence we want to know, just as there is demonstration for proper attributes; in that case we would have to look for this method. But if there is no single, common

1 For Aristotle the soul (*psychē*) is the principle of life in any living thing, plants included, not only the seat of thought or personality.

method for finding what a thing is, the task becomes harder still, for we will need to grasp, in each case, what the right approach is. And even if it becomes clear whether this is demonstration, or division, or some other method, there are still many puzzles and wrong turns about what we should start from; for different things have different principles, as numbers and planes do. First, perhaps, we must determine in which genus the soul falls and what it is—I mean whether it is a particular thing and a substance, or a quality, or a quantity, or some other of the categories we have distinguished—and further whether it is among the things that exist potentially or is rather a kind of actuality. That makes no [402b] small difference. We must also consider whether it is divisible into parts or without parts, and whether every soul is of the same kind or not; and if not, whether souls differ in species or in genus. For as things stand, those who discuss and inquire into the soul seem to examine only the human soul. We must take care not to overlook whether there is one account of soul, as there is of animal, or a different one for each kind—horse, dog, human being, god—the universal "animal" being either nothing or posterior. The same would hold for anything else common that was predicated. Further, if there are not many souls but parts of one, should we investigate the whole soul first, or its parts? It is hard, too, to determine which of these parts are by nature distinct from one another, and whether we should investigate the parts first or their functions—thinking, say, before intellect, and perceiving before the perceptive capacity; and likewise in the other cases. And if the functions come first, one might raise the further puzzle whether we should investigate their correlative objects before them—the object of perception before the perceptive capacity, and the object of thought before the thinking capacity. It seems that knowing what a thing is is useful not only for studying the causes of the attributes of substances—as in mathematics, knowing what the straight and the curved are, or what a line and a plane are, is useful for seeing how many right angles the angles of a triangle are equal to—but conversely, too, the attrib-

utes contribute a great deal to knowing what a thing is. For when we can give an account of the attributes as they appear to us, of all or most of them, then we will also be in the best position to speak about the substance. The starting point of every demonstration is what a thing is; so any definitions that do not lead us to know the 403a attributes, or even make it easy to guess about them, have plainly all been stated in a merely dialectical and empty way. The affections of the soul also raise a puzzle: are they all shared with the thing that has the soul, or is there also some affection proper to the soul itself? We must settle this, but it is not easy. In most cases the soul evidently neither undergoes nor does anything without the body—being angry, for instance, feeling confident, having appetites, and perceiving in general. Thinking looks most like something proper to the soul. But if this too is a kind of imagination, or does not occur without imagination, then not even this could exist without the body.[2] If, then, any of the soul's functions or affections is proper to it, the soul could be separated; but if nothing is proper to it, it would not be separable. It would be like the straight: many things belong to the straight as straight—touching a bronze sphere at a point, for instance—yet the straight will not touch it in this way if it is separated; for it is inseparable, since it always exists with some body. And all the affections of the soul seem to exist with the body—anger, gentleness, fear, pity, confidence, and also joy, and loving and hating—for at the same time as these, the body is affected in some way. This is shown by the fact that sometimes, when strong and vivid provocations occur, we are not at all irritated or frightened, while at other times we are moved by small and faint ones, when the body is aroused and in the condition it is in when one is angry. This is still more evident: when nothing frightening is happening, people come to have the feelings of someone who is afraid. If this is so, the affections are clearly accounts embodied in matter. So their definitions will be of this

2 Imagination (*phantasia*) for Aristotle is the capacity for appearances or images to present themselves to the mind, as in memory and dreams, not only creative fancy.

sort: being angry is a certain motion of a body of such-and-such a kind, or of a part or capacity of it, caused by this, for the sake of that. For these reasons the study of the soul—either all soul or this kind of soul—already belongs to the natural scientist. But the natural scientist and the dialectician would define each of these differently—what anger is, for example. The dialectician would say it is a desire to pay back pain, or something of the sort; the natural scientist, that it is a boiling of the blood [403b] and heat around the heart. The latter gives the matter, the former the form and the account. For the account is the form of the thing, and it must be in matter of such-and-such a kind if the thing is to exist. Take a house: its account is something like this —that it is a shelter preventing destruction by wind, rain, and heat. Someone else will say it is stones, bricks, and timber; and another, that it is the form in these, for the sake of such-and-such ends. Which of these, then, is the natural scientist? The one concerned with the matter but ignorant of the account, or the one concerned only with the account? Or rather the one who combines both? And what, then, is each of the other two? Or is there no one who deals with the affections of matter that are not separable, nor treats them as separable? Instead, the natural scientist deals with all the functions and affections of such-and-such a body and such-and-such matter; whatever is not of this sort belongs to someone else. Some of it belongs, as the case may be, to a craftsman, such as a carpenter or a doctor. What is not separable, but is considered not as affections of such a body and by abstraction, belongs to the mathematician; and what is separate, to the first philosopher. But we must return to where our discussion began. We were saying that the affections of the soul—anger and fear, for instance—are inseparable from the natural matter of animals, insofar as they belong to them as such, and are not like a line and a plane.

WHAT EARLIER THINKERS SAID THE SOUL IS

Aristotle surveys his predecessors, who defined the soul by motion, perception and incorporeality.

In inquiring about the soul, we must work through the puzzles that have to be resolved as we go forward, and at the same time take in the opinions of those of our predecessors who declared anything about it, so that we may adopt what was well said and guard against anything that was not. The starting point of the inquiry is to set out what most seems to belong to the soul by nature. What has soul seems to differ from what lacks it chiefly in two respects: motion and perception. These are also, roughly, the two things about the soul that we have received from our predecessors. For some say that soul is, most of all and primarily, what causes motion. Thinking that what is not itself in motion cannot move anything else, they supposed that the soul is one of the things in motion. Hence Democritus says it is a kind of 404a fire and something hot. There are infinitely many shapes and atoms, and he says the spherical ones are fire and soul—like the so-called motes in the air, which appear in the sunbeams coming through windows. The whole seed-mixture of these, he says, is the elements of all nature. Leucippus says the same. Of these, the spherical ones are soul, because shapes of this kind are best able to slip through everything and to move the rest while being in motion themselves; for they assume that the soul is what supplies animals with motion.[3] That is also why they make breathing the defining mark of life. When the surrounding air compresses bodies and squeezes out the shapes that supply animals with motion—because these are never at rest themselves—help comes from outside when other such shapes enter in breathing. These prevent the ones already present in the animal from being expelled, by helping to hold back what compresses and solidifies it; and animals live as long

3 Democritus (fifth century BC) and his predecessor Leucippus founded atomism: the world consists of indivisible bodies moving through the void.

as they can do this. What the Pythagoreans say seems to carry the same thought. Some of them said the soul is the motes in the air, others that it is what moves them. They spoke of the motes because these are seen to be continuously in motion even when the air is completely still.[4] Those who say the soul is what moves itself tend in the same direction. They all seem to have supposed that motion is what is most characteristic of the soul, and that everything else is moved by the soul, while the soul is moved by itself—because they saw nothing that causes motion without being in motion itself. Similarly Anaxagoras says that the soul is what causes motion, as does anyone else who has said that intellect set the universe in motion—though not entirely as Democritus does. For Democritus simply identified soul and intellect, since he held that what is true is what appears. That is why, he said, Homer did well to write that Hector "lay thinking other thoughts." So he does not treat intellect as a capacity concerned with truth, but says soul and intellect are the same.[5] 404b Anaxagoras is less clear about them. In many places he says that intellect is the cause of what is fine and right, but elsewhere that it is the soul; for he says it is present in all animals, large and small, honored and less honored. But intellect in the sense of intelligence does not appear to belong equally to all animals—not even to all human beings.

4 The Pythagoreans were followers of Pythagoras (sixth century BC), who formed a religious and philosophical community in southern Italy.

5 Anaxagoras of Clazomenae (fifth century BC) held that Intellect set the originally mixed universe in motion and in order.

> Those, then, who looked to the fact that what has soul moves took the soul to be what is most capable of causing motion. Those who looked to its knowing and perceiving the things that are say that the soul is the principles—some making these many, others one. Empedocles, for instance, says the soul is composed of all the elements, and also that each of them is soul, putting it this way: "With earth we see earth, with water water,
> with air the bright air, with fire consuming fire,
> with love love, and strife with grievous strife." In the same way Plato too, in the *Timaeus*, makes the soul out of the elements; for like is known by like, and things are made of the principles.[6]

Similarly, in the lectures *On Philosophy* it was laid down that the Animal itself is made of the form of the One itself and of the primary length, breadth, and depth, and the other things in a similar way. It was also put another way: intellect is the one, scientific knowledge the two (for it proceeds in one line to one point), opinion the number of the plane, and perception the number of the solid. For numbers were said to be the forms themselves and the principles, and they are made from the elements. Things are judged some by intellect, some by knowledge, some by opinion, some by perception; and these numbers are the forms of things. And since the soul seemed to be both capable of causing motion and capable of knowing, some wove the two together and declared that the soul is a number that moves itself.[7] They disagree about the principles—what they are and how many. Those who make them bodily differ most from those who make them incorporeal, 405a and from both of these differ those who mix the two and declare the principles to come from both. They also disagree about their number: some say one, oth-

6 Empedocles of Acragas (fifth century BC) held that everything is made of four elements—earth, water, air, fire—brought together by Love and separated by Strife.
7 *On Philosophy* is probably Aristotle's lost dialogue of that name, though some take it to refer to Plato's lectures; the view reported is Platonist.

ers several. And they give their account of the soul accordingly. For they have supposed, not unreasonably, that what is by nature capable of causing motion is among the primary things. That is why some thought the soul was fire: fire is the finest in its parts and the most nearly incorporeal of the elements, and, more than that, it is primarily what both is moved and moves other things. Democritus has put it more subtly, explaining why each of these is so. Soul and intellect are the same, he says, and this is one of the primary, indivisible bodies; and it causes motion because of the fineness of its parts and its shape. Of the shapes, he says, the spherical is the most mobile, and intellect and fire are of this kind. Anaxagoras seems to say that soul and intellect are different, as we also said earlier, but he treats both as a single nature—except that it is intellect above all that he makes the principle of all things. At any rate he says that it alone of the things that are is simple, unmixed, and pure. He assigns both knowing and causing motion to the same principle, saying that intellect set the universe in motion. Thales too, from what is recorded of him, seems to have supposed that the soul is something capable of causing motion, if indeed he said that the stone has a soul because it moves iron. Diogenes, like some others, thought it was air, believing air to be the finest of all things in its parts and a principle. That is why, he held, the soul knows and causes motion: insofar as air is primary and everything else comes from it, the soul knows; insofar as it is finest, it is capable of causing motion. Heraclitus too says that the principle is soul, if indeed it is the exhalation from which he composes everything else. It is the most incorporeal of things and always flowing; and what is in motion is known by what is in motion. He thought, as most did, that the things that are are in motion.[8] Alcmaeon too seems to have held a view of the soul close to these. He says it is immortal because it resembles the immortals, and that this belongs to it because it is always in motion; for all divine things too are always moving continuously 405b and

8 Thales of Miletus (sixth century BC) is traditionally the first Greek philosopher; the stone is the magnet, or lodestone.

forever—moon, sun, stars, and the whole heaven. Among the cruder thinkers, some have even declared the soul to be water, like Hippo. They seem to have been persuaded by semen, since in all animals it is moist. Indeed, Hippo refutes those who say the soul is blood on the grounds that semen is not blood, and semen, he says, is the primary soul. Others say blood, like Critias, supposing that perceiving is most characteristic of soul, and that this belongs to it because of the nature of blood. So every element has found a champion except earth. No one has declared for earth—unless someone has said that the soul is made of all the elements, or is all of them.[9] All of them, one may say, define the soul by three things: motion, perception, and incorporeality; and each of these is traced back to the principles. That is why those who define the soul by knowing make it either an element or composed of the elements, saying much the same as one another, with one exception. For they say that like is known by like; and since the soul knows all things, they compose it of all the principles. Those who speak of a single cause and a single element, then, also posit the soul as one thing—fire or air, for instance—while those who say the principles are several make the soul several too. Only Anaxagoras says that intellect is unaffected and has nothing in common with anything else. But how, being like this, it will know, and through what cause, he has not said, nor is it clear from what he has said. Those who put contraries among the principles also compose the soul of contraries; those who take one of the contraries—hot or cold or something else of the kind—likewise make the soul one of these. That is why they even follow the words. Some say the soul is the hot, because that is where the word for "living" gets its name; others say it is the cold, because the soul (*psychē*) is so called from breathing and cooling (*katapsyxis*).

9 Alcmaeon of Croton, Hippo, and Critias were thinkers of the fifth century BC; Critias, a relative of Plato, later led the Thirty Tyrants at Athens.

These, then, are the views about the soul that have been handed down, and the reasons why people hold them.[10]

DOES THE SOUL MOVE ITSELF?

Aristotle argues against the view that the soul is in motion, including the world soul of the Timaeus.

We must first examine motion. For perhaps it is not only false that the soul's essence is of the kind 406a described by those who say the soul is what moves itself, or is capable of moving itself: it may also be one of the impossibilities that motion should belong to it at all. That what causes motion need not itself be in motion has been said before. Everything that is moved is moved in one of two ways—either by virtue of something else or in its own right. (We say things are moved by virtue of something else when they are moved by being in something that is moved, like sailors: they are not moved in the same way as the ship, for the ship is moved in its own right, and they by being in something that is moved. This is clear in the case of the parts: the motion proper to the feet is walking, and this is also proper to human beings; but it does not belong to the sailors at that time.) Since, then, being moved is spoken of in two ways, we are now examining whether the soul is moved in its own right and shares in motion. There are four kinds of motion—locomotion, alteration, decay, and growth—so the soul would be moved in one of these, or several, or all. If it is moved not incidentally, motion would belong to it by nature; and if so, place would too, for all the motions mentioned are in place. And if the essence of the soul is to move itself, being moved will belong to it not incidentally, as it does to the white or the three-cubits-long. These too are moved, but incidentally: what they belong to, the body, is what is moved. That is why there is no place for them; but there will be one for the soul, if it shares in motion by nature. Further, if it is moved by nature, it could also be moved by force; and if

10 The etymologies link *zēn*, "to live," with *zein*, "to boil," and *psychē*, "soul," with *psychros*, "cold."

by force, also by nature. The same holds for rest: where a thing moves by nature, there it also rests by nature; and likewise where it is moved by force, there it also rests by force. But what forced motions and rests of the soul there could be is not easy to explain, even for those willing to make things up. Further, if it moves upward it will be fire, and if downward, earth, since these are the motions of these bodies; and the same argument applies to the intermediate ones. Further, since the soul evidently moves the body, it is reasonable that it causes the same motions that it itself undergoes. If so, it is also true to say, conversely, that whatever motion the [406b] body undergoes, the soul undergoes too. But the body moves by locomotion; so the soul too would change place as the body does, moving either as a whole or part by part. And if this is possible, it would also be possible for it to leave the body and enter it again; and from this it would follow that dead animals could rise again. As for incidental motion, the soul might also be moved by something else, since the animal might be pushed by force. But a thing whose essence includes being moved by itself cannot be moved by something else, except incidentally—just as what is good in its own right, or for its own sake, cannot be good because of something else or for the sake of something else. And one might say that the soul, if it is moved at all, is moved above all by the objects of perception. Moreover, if it does move itself, then it would itself be moved; so if every motion is a displacement of what is moved, insofar as it is moved, the soul too would be displaced from its essence—unless it moves itself incidentally. But in fact the motion belongs to its essence in its own right. Some even say that the soul moves the body it is in in the same way that it is itself moved—Democritus, for instance, who talks much like Philip the comic playwright. Philip says that Daedalus made his wooden Aphrodite move by pouring quicksilver into it. Democritus says something similar: the indivisible spheres, he says, which are in motion because it is their nature never to stay still, drag the whole body along with them and move it. We, however, will ask whether these same things also produce rest.

How they would do so is hard, or even impossible, to say.[11] In general, this does not seem to be how the soul moves the animal; it moves it through some kind of decision and thought. In the same way Timaeus too gives a physical account of how the soul moves the body: by being moved itself, it also moves the body, because it is interwoven with it. Having composed the soul from the elements, and divided it according to the harmonic numbers so that it might have an innate perception of harmony and the universe might move with concordant motions, he bent its straight line into a circle; and having divided the one circle into two joined at two points, 407a he divided one of them again into seven circles—as though the motions of the heaven were the motions of the soul.[12] First, then, it is not right to say that the soul is a magnitude. For he evidently means the soul of the universe to be the sort of thing that the so-called intellect is—not, surely, like the perceptive or the appetitive soul, since their motion is not circular. Intellect is one and continuous in the way thinking is; thinking is its thoughts; and these are one by succession, as a number is, not as a magnitude is. So intellect is not continuous in that way either: it is either without parts or not continuous as a magnitude is. For how, if it is a magnitude, will it think? With any one of its parts at all? Parts, that is, either in the sense of a magnitude or in the sense of a point—if a point should be called a part at all. If it thinks with a point, and points are infinite, it clearly will never get through them; if with a part that is a magnitude, it will think the same thing many or infinitely many times. But evidently it can think a thing just once. And if it is enough to touch the object with any one of its parts, why must it move in a circle, or have magnitude at all? But if in order to think it must touch the object with the whole circle, what is the touching done by the parts? Further, how will it think what has

11 Daedalus was the legendary craftsman whose statues were said to move by themselves.

12 Timaeus is the main speaker of Plato's dialogue of that name, in which a divine craftsman constructs the soul of the world.

parts with what is without parts, or what is without parts with what has parts? And the intellect must be this circle. For the motion of intellect is thinking, and that of a circle is revolution; so if thinking is revolution, the circle whose revolution is thinking would be intellect. It will always be thinking something—it must, if the revolution is everlasting. But practical thoughts have limits (for they are all for the sake of something else), and theoretical thoughts are bounded in the same way as accounts are. Every account is either a definition or a demonstration. Demonstrations proceed from a starting point and have, in a way, an end: the deduction, or conclusion. And even if they are not brought to a close, at least they do not turn back again to their starting point; they keep adding a middle term and an extreme and go straight ahead. Revolution, by contrast, turns back again to its starting point. And definitions are all limited. Further, if the same revolution occurs many times, it will have to think the same thing many times. Further, thinking seems more like a kind of rest or halt than like a motion; and the same goes for deduction. Moreover, what is not [407b] easy but forced cannot be blessed; and if its motion is not its essence, the soul would be moved contrary to nature. It would also be burdensome to be mixed with the body without being able to get free—and something to be avoided besides, if it is indeed better for intellect not to be with a body, as is often said and widely agreed. The cause of the heaven's moving in a circle is also left unclear. The soul's essence is not the cause of its moving in a circle—it moves that way incidentally—nor is the body the cause; rather the soul is the cause for the body. Nor, in fact, is it said that moving this way is better. Yet the reason the god made the soul move in a circle ought to have been that moving was better for it than staying still, and moving in this way better than in some other. But since an inquiry of this kind belongs more properly to other discussions, let us leave it for now. There is, however, an absurdity that follows both for this theory and for most theories about the soul. They attach the soul to a body and place it in one without specifying further why this happens

and what condition the body is in. Yet this would seem to be necessary; for it is because they have something in common that one acts and the other is acted on, one is moved and the other moves, and none of these relations holds between things taken at random. These thinkers try only to say what sort of thing the soul is, but specify nothing further about the body that is to receive it—as though it were possible, as in the Pythagorean stories, for any soul whatever to enter any body whatever. For each body seems to have its own distinctive form and shape. What they say is like saying that carpentry enters into flutes. A craft must use its tools, and a soul its body.

IS THE SOUL A HARMONY?

Aristotle rejects the view that the soul is a harmony and argues that the soul itself is not moved.

Another view about the soul has also been handed down. It is persuasive to many—no less so than any of those mentioned—though it has already, as it were, submitted to an audit in discussions held in public. They say the soul is a kind of harmony: for a harmony is a blending and combination of contraries, and the body is composed of contraries. Yet a harmony is a certain ratio of the things mixed, or a combination of them, and the soul cannot be either of these. Further, causing motion is not a feature of a harmony, whereas pretty well everyone assigns this to the soul [408a] above all. It is more fitting to speak of harmony in connection with health, and bodily excellences generally, than in connection with the soul. This becomes most evident if one tries to attribute the affections and functions of the soul to some harmony: it is hard to make them fit.[13] Further, when we speak of harmony we have two things in view. In the most proper sense it is the combination of magnitudes in things that have motion and position, when they are fitted together so closely that they admit nothing of the same kind between them; and derivatively

13 Athenian officials had to submit to a public audit (*euthynai*) of their conduct at the end of their term of office.

it is also the ratio of things mixed. In neither sense is it reasonable to call the soul a harmony. The view that it is a combination of the parts of the body is very easy to test: there are many combinations of the parts, and they are combined in many ways. Of what, then, and how, should we suppose intellect to be a combination—or the perceptive or the desiring capacity? It is equally absurd for the soul to be the ratio of the mixture. For the mixture of the elements that makes flesh does not have the same ratio as the one that makes bone. It will follow, then, that one has many souls, all through the body, if every part is made of the elements mixed, and the ratio of the mixture is a harmony and a soul. One might demand an answer on this point from Empedocles too, since he says that each of the parts exists by a certain ratio. Is the ratio, then, the soul, or is the soul rather something different that comes to be in the limbs? Further, is Love the cause of just any mixture, or of the mixture that accords with the ratio? And is Love itself the ratio, or something else besides the ratio? These views, then, involve puzzles of this sort. But if the soul is something other than the mixture, why on earth is it destroyed at the same time as the being of flesh, and of the other parts of the animal? Besides, if each of the parts does not have a soul, and the soul is not the ratio of the mixture, what is it that is destroyed when the soul departs? It is clear from what has been said, then, that the soul cannot be a harmony, nor revolve in a circle. But it can be moved incidentally, as we said, and can even move itself—that is, the thing it is in can be moved, and this can be moved by the soul. In no other way can it move in place. One might with more reason raise the puzzle whether it is [408b] moved by looking at facts like these. We say that the soul is pained and pleased, is confident and afraid, and also that it gets angry, perceives, and thinks; and all these seem to be motions. From this one might think that the soul is moved. But that does not necessarily follow. For suppose, as much as you like, that being pained or pleased or thinking are motions, and that each of them is a case of being moved, and that the being moved is due to the soul—being angry or afraid, for instance, is the heart's

being moved in a certain way, and thinking is perhaps something like this or something else. Some of these happen through the locomotion of certain things that are moved, others through alteration; which, and how, is another question. Even so, to say that the soul is angry is like saying that the soul weaves or builds a house. It is perhaps better not to say that the soul pities or learns or thinks, but that the human being does so with the soul. And this not in the sense that the motion is in the soul, but that sometimes it reaches as far as the soul and sometimes it starts from it. Perception, for instance, starts from these particular things, while recollection starts from the soul and goes to the motions or persisting traces in the sense organs. Intellect, however, seems to come to be in us as a kind of substance, and not to be destroyed. If it were destroyed, it would be above all by the dimming that comes with old age; but as it is, what happens is perhaps just what happens with the sense organs. If an old man got an eye of the right kind, he would see just as a young man does. So old age is not due to the soul's having been affected in some way, but to what it is in, as happens in drunkenness and illness. Thinking and contemplating, too, fade when something else within is destroyed, but intellect itself is unaffected. Thinking, loving, and hating are not affections of intellect, but of this particular thing that has it, insofar as it has it. That is why, when this is destroyed, one neither remembers nor loves; for these belonged not to intellect but to the composite, which has perished. Intellect is perhaps something more divine, and unaffected. That the soul cannot be moved, then, is clear from this; and if it is not moved at all, clearly it is not moved by itself either. But by far the most unreasonable of the views mentioned is to say that the soul is a number that moves itself. Its proponents face impossibilities: first, those that follow from its being moved, and then some peculiar to calling it [409a] a number. How are we to conceive of a unit being moved—by what, and how—when it is without parts and without differences? For if it is capable of causing motion and of being moved, it must have differences. Again, since they say that a line in motion makes a

plane, and a point in motion a line, the motions of the units will also be lines; for a point is a unit that has position, and the number of the soul is already somewhere and has position. Again, if you subtract a number or a unit from a number, another number is left; but plants and many animals go on living when divided, and seem to have the same soul in form. It would seem to make no difference whether one speaks of units or of tiny bodies. For if Democritus' little spheres became points and only their being a quantity remained, there would be something in it that moves and something that is moved, just as in what is continuous. What we have said follows not because they differ in size, being large or small, but because they are a quantity. So there must be something that will move the units. But if in the animal what moves is the soul, then it is so in the number too; so the soul is not both what moves and what is moved, but only what moves. And how, then, can this be a unit? It would have to have some difference from the others; and what difference can a unit-point have except position? Now if the units in the body are different from the points, the units will be in the same place as the points, since each will occupy the place of a point. Yet if two can be in the same place, what prevents infinitely many from being there? For things whose place is indivisible are themselves indivisible too. But if the points in the body are the soul's number, or if the soul is the number made up of the points in the body, why do all bodies not have souls? For there seem to be points in all bodies, and infinitely many of them. Again, how can souls be separated and released from bodies, if lines are not divided into points?

IS THE SOUL MADE OF THE ELEMENTS?

Aristotle finishes with the soul as a self-moving number, then attacks the view that it is made of elements.

As we said, the result is that in one respect this view says the same as those who make the soul a body of fine particles, and in another—in holding, as [409b] Democritus does, that the body is

moved by the soul—it has an absurdity all its own. For if the soul is present throughout the perceiving body, then, if the soul is a body, there must be two bodies in the same place. And for those who call it a number, there must be many points in a single point, or else every body has a soul—unless some different number comes to be in the body, other than the points already present in it. It also follows that the animal is moved by the number, just as we said Democritus has it moved. For what difference does it make whether you speak of small spheres or large units, or simply of units in motion? Either way the animal must be moved by their being moved. For those who have woven motion and number together into the same thing, then, these consequences follow, and many others like them. Not only can such a thing not be the definition of soul; it cannot even be an attribute of it. This becomes clear if one tries to account for the soul's affections and actions on the basis of this account—reasonings, perceptions, pleasures, pains, and everything else of that kind. For as we said before, it is not easy even to guess at them from these premises. Three ways of defining the soul have been handed down to us: some declared it to be what most causes motion, because it moves itself; others said it is the body with the finest particles, or the least bodily of all. We have now more or less gone through the difficulties and inconsistencies these views involve. It remains to examine what is meant by saying that the soul is made of the elements. They say this so that the soul may perceive and know each of the things there are; but the account necessarily leads to many impossibilities. They hold that like is known by like, as if they were making the soul identical with the things it knows. But the elements are not the only things there are; there are many others as well—or rather, perhaps, infinitely many—made up of them. Grant, then, that the soul knows and perceives the things each of these is made of; but by what will it know or perceive the whole composite—what a god is, for instance, or a human being, or flesh, or bone? And the same goes for [410a] any other composite thing. For each of these is not the elements in just any arrangement, but the ele-

ments in some ratio and combination, as Empedocles too says of bone:

> "And kindly earth in her broad-breasted crucibles
> received, of eight parts, two of gleaming Nestis,
> and four of Hephaestus; and white bones came to be." So it is of no use for the elements to be in the soul unless the ratios and the combination are in it too. Each element will know its like, but nothing will know bone or a human being unless these too are in the soul. There is no need to say that this is impossible: who would wonder whether there is a stone or a human being in the soul? And the same goes for the good and the not-good, and in the same way for everything else.[14]

Again, "being" is said in many ways: it signifies a particular thing, or a quantity, or a quality, or some other of the categories we have distinguished. Will the soul be made of all of these or not? But there do not seem to be elements common to all of them. Is it made, then, only of the elements of substances? Then how does it know each of the other things as well? Or will they say that each genus has its own elements and principles, and that the soul is composed of these? Then it will be a quantity and a quality and a substance. But it is impossible for something made of the elements of quantity to be a substance and not a quantity. Those who say the soul is made of all the elements face these consequences and others like them. It is also absurd to say that like is not affected by like, and yet that like perceives like and knows like by like. Yet they hold that perceiving is a way of being affected and moved, and so too are thinking and knowing. That it involves many difficulties and problems to say, as Empedocles does, that each thing is known by means of the bodily elements and by relation to what is like it, is borne out by what we have just said. For the parts of animals' bodies that are simply earth, such as [410b] bones, sinews and hair, seem to per-

14 In Empedocles' verses Nestis stands for water and Hephaestus, the smith god, for fire.

ceive nothing at all, and so not even what is like them—though on this view they should. Again, each of the principles will have more ignorance than understanding: each will know one thing and be ignorant of many, namely all the rest. For Empedocles, at any rate, it even follows that the god is the least intelligent of beings. He alone will fail to know one of the elements, Strife, whereas mortal things will know them all, since each of them is made of all of them.[15] And in general, why do all things that exist not have a soul, since everything is either an element, or made of one element, or of several, or of all? For then each thing must know one thing, or some, or all. One might also ask what it is that unifies the elements. The elements, at any rate, are like matter, and what holds them together, whatever it is, is the most authoritative thing. But it is impossible for there to be anything superior to the soul and ruling over it—and still more impossible for there to be anything superior to intellect. For it is reasonable that intellect is the most primordial of things and by nature in control; yet they say that the elements are the first of the things that are. All of them—both those who say the soul is made of the elements because it knows and perceives the things that are, and those who say it is what most causes motion—fail to speak about every kind of soul. For not everything that perceives causes motion: some animals are evidently stationary. And yet this, motion in place, seems to be the only kind of motion by which the soul moves the animal. The same holds for those who make intellect and the perceptive capacity out of the elements. For plants evidently live without sharing in locomotion or perception, and many animals evidently lack thought. And even if one granted these points and set down intellect as a part of the soul, and the perceptive capacity likewise, not even so would they be speaking universally about every soul, or about the whole of any single one. The account in the so-called Orphic poems suffers from the same defect. It says that the soul enters from the universe as living things breathe,

15 Empedocles' god is the Sphere, the perfect blend of the elements under Love, from which Strife is shut out.

carried by the winds. But this cannot happen to plants, or 411a to some animals, since not all of them breathe. This has escaped those who have adopted this view. And if one must make the soul out of the elements, there is no need to make it out of all of them: one member of a pair of contraries is enough to judge both itself and its opposite. For by means of the straight we know both it and the crooked: the carpenter's rule is the judge of both, whereas the crooked judges neither itself nor the straight. Some also say that soul is mixed throughout the universe; perhaps that is why Thales too thought that all things are full of gods.[16] But this view has some difficulties. Why is it that the soul, when it is in air or fire, does not make an animal, while it does in mixed bodies—even though it seems to be better when it is in those elements? One might also ask why the soul in the air should be better and more immortal than the soul in animals. Either way the result is absurd and unreasonable. To call fire or air an animal is among the more unreasonable claims; yet not to call them animals when soul is present in them is absurd. They seem to have supposed that soul is in these elements because the whole is of the same kind as its parts. So they have to say that soul, too, is of the same kind as its parts, if animals come to have souls by taking into themselves some portion of what surrounds them. But if air, when split up, is uniform, while the soul is made of unlike parts, then clearly some part of the soul will be present in it and some part will not. So the soul must either be made of like parts, or not be present in just any part of the universe. It is clear from what has been said, then, that knowing does not belong to the soul because it is made of the elements, and that it is neither right nor true to say that the soul is moved. Knowing belongs to the soul, and so do perceiving and believing, and also appetite, wishing and desires in general; locomotion, too, comes about in animals through the soul, and so do growth, maturity and decline. Does each of these belong to the 411b whole soul—do we think and perceive with the whole of it,

16 The Orphic poems were religious verses ascribed to the legendary singer Orpheus, concerned with the gods and the fate of the soul.

and do and undergo each of the other things with the whole of it —or do different ones belong to different parts? And what about living itself: does it reside in one of these parts, or in several, or in all of them, or is something else its cause? Some say that the soul is divisible, and that it thinks with one part and has appetites with another. What, then, holds the soul together, if it is naturally divisible? Certainly not the body. On the contrary, it seems rather that the soul holds the body together: at any rate, when the soul departs, the body breathes away and rots. If, then, something else makes the soul one, that would most of all be soul. But then we shall have to ask of that thing too whether it is one or has many parts. If it is one, why not say straight away that the soul is one? If it is divisible, the argument will again ask what holds it together, and so it will go on to infinity. One might also raise a difficulty about the parts of the soul: what capacity does each of them have in the body? For if the whole soul holds the whole body together, each of its parts should also hold some part of the body together. But this seems impossible: it is hard even to imagine what part intellect will hold together, or how. Plants, too, evidently live when divided, and so do some animals among the insects, as though they had the same soul in form, if not in number; at any rate each of the pieces has perception and moves from place to place for some time. That they do not survive is not strange, since they lack the organs to preserve their nature. Nonetheless all the parts of the soul are present in each of the pieces, and they are of the same kind as one another and as the whole—as one another, because they are not separable, and as the whole soul, because it is divisible. The principle in plants, too, seems to be a kind of soul, since it is the only one that animals and plants share. And this principle can be separated from the perceptive principle, but nothing has perception without it.

Book II

The soul and the senses
Aristotle defines the soul as the form of a living body and analyzes nutrition and each of the five senses.

THE SOUL AS THE FORM OF A LIVING BODY

Aristotle defines the soul as the first actuality of a natural body equipped with organs.

412a So much for the views about the soul handed down by our predecessors. Let us now go back and start again, as it were, from the beginning, trying to determine what the soul is and what its most general account would be. We say, then, that one kind of thing there is is substance; and of substance, one sort is matter, which is not in itself a particular thing; another is shape and form, in virtue of which a thing is then called a particular thing; and a third is what is made of both. Matter is potentiality, form is actuality—and actuality in two ways: one like knowledge, the other like contemplating. Bodies seem most of all to be substances, and of bodies, natural ones; for these are the principles of the others. Of natural bodies, some have life and some do not; by life we mean nourishment, growth and decay through the thing itself. So every natural body that shares in life would be a substance, and a substance in the sense of a composite. But since it is a body of a certain kind—one that has life—the body could not be the soul. For the body is not one of the things said of a subject; it is rather the subject and matter. So the soul must be substance as the form of a natural body that potentially has life. But substance is actuality; so the soul is the actuality of a body of this kind. And actuality is spoken of in two ways: one

like knowledge, the other like contemplating. Clearly, then, the soul is actuality in the way knowledge is. For both sleep and waking depend on the soul's being present, and waking corresponds to contemplating, sleep to having knowledge without exercising it; and in the same individual knowledge comes first in the order of coming to be. That is why the soul is the first actuality of a natural body that potentially has life. And a body of this kind is one equipped with organs. [412b] Even the parts of plants are organs, though entirely simple ones: the leaf, for instance, is a covering for the pod, and the pod for the fruit; and roots are analogous to the mouth, since both draw in nourishment. If, then, we must state something common to every soul, it would be this: the first actuality of a natural body equipped with organs.[1] That is why we should not ask whether the soul and the body are one, any more than whether the wax and its shape are one, or in general whether the matter of each thing and that of which it is the matter are one. For although "one" and "being" are said in several ways, actuality is what they are in the strictest sense. We have now said in general what the soul is: it is substance in the sense of a thing's account. That is, it is the essence—what it is to be—of a body of this particular kind. It is as if some tool, say an axe, were a natural body: then being an axe would be its substance, and this would be its soul. If this were separated from it, it would no longer be an axe, except in name. As things are, though, it is an axe; for the soul is not the essence and account of a body of that kind, but of a particular kind of natural body, one that has within itself a principle of motion and rest. We should also consider what has been said as it applies to the parts. If the eye were an animal, sight would be its soul; for sight is the eye's substance in the sense of its account. The eye is the matter of sight; when sight is gone, it is no longer an eye, except in name, like an eye of stone or a painted one. We must now apply what holds of the part to the whole living body: as the part is to the part, so perception as a

1 First actuality is having a capacity ready for use, as someone who knows a language has it while asleep; second actuality is exercising it.

whole is to the whole perceptive body, as such. And what is potentially such as to live is not the body that has lost its soul, but the one that has it. Seed and fruit are potentially a body of this kind. Just as cutting and seeing are, so waking too is 413a actuality; while the soul is actuality in the way sight is, or the capacity of the tool. The body is what is potentially. But just as the eye is the pupil plus sight, so in the other case the animal is the soul plus the body. It is quite clear, then, that the soul is not separable from the body—or at least some parts of it are not, if it is naturally divisible—since some of its parts are the actuality of the bodily parts themselves. Still, nothing prevents some parts from being separable, because they are not the actuality of any body. Further, it is unclear whether the soul is the actuality of the body in the way a sailor is of a ship. Let this serve as an outline, a rough sketch, of the soul.

LIFE AND THE CAPACITIES OF THE SOUL

Aristotle defines living by nutrition, perception, thought and motion, and asks whether these can be separated.

What is clear and better known by reason emerges from what is unclear but more evident to us; so we must try to go over the soul again in this way. For a defining account should not just show the fact, as most definitions do; the cause should also be present in it and made apparent. As things are, the statements of definitions are like conclusions. For example, what is squaring? It is making an equilateral rectangle equal to an oblong one. A definition like this is a statement of the conclusion. But someone who says that squaring is the finding of a mean proportional states the cause of the thing. Let us say, then, taking this as the starting point of our inquiry, that what has a soul is distinguished from what lacks one by living.[2] Living is spoken of in several ways, and we say a thing lives if even one of these is present in it: intellect, perception, motion and rest in place, and

2 "Squaring" here is constructing a square equal in area to a given rectangle; the side of the square is the mean proportional between the rectangle's two sides.

also the motion involved in nourishment, and decay and growth. That is why all plants, too, are thought to live. For they evidently have within themselves a capacity and principle of this kind, through which they grow and decay in opposite directions: they do not grow upward and not downward, but both ways alike and in every direction, and they are nourished and go on living to the end, as long as they can take in nourishment. This capacity can be separated from the others, but the others cannot be separated from it—in mortal beings, at least. This is evident in plants: they have no other capacity [413b] of soul. It is through this principle, then, that living belongs to living things; but it is primarily through perception that a thing is an animal. For even things that do not move or change their place, but have perception, we call animals, and do not just say they are alive. And the first form of perception, which belongs to all animals, is touch. Just as the nutritive capacity can be separated from touch and from all perception, so touch can be separated from the other senses. By "nutritive" we mean the part of the soul that even plants share in; and all animals evidently have the sense of touch. Why each of these is so we shall explain later. For now let it be enough to say only this: the soul is the principle of the things we have mentioned and is defined by them—by the capacities for nutrition, perception and thought, and by motion. Is each of these a soul, or a part of a soul? And if a part, is it separable only in account, or in place as well? In some cases this is not hard to see, but some raise a difficulty. For just as, in the case of plants, some evidently go on living when divided and separated from each other—the soul in them being actually one in each plant, but potentially several—so we see the same happening with other varieties of soul in insects that are cut in two. Each of the pieces has perception and locomotion; and if perception, then also imagination and desire. For where there is perception there is also pain and pleasure, and where these are, there is necessarily appetite too. About intellect and the capacity for contemplation nothing is yet clear. It seems to be a different kind of soul, and this alone can be separated, as the ever-

lasting from the perishable. It is clear from these considerations that the remaining parts of the soul are not separable, as some claim; but it is clear that they are different in account. For being perceptive is different from being capable of belief, since perceiving is different from believing; and similarly with each of the others we have mentioned. Further, some animals have all of these, others some of them, and others only one. This is what makes 414a the differences among animals; the reason for it must be examined later. Something very similar holds of the senses: some animals have them all, some have some, and some have only one, the most necessary one, touch. "That by which we live and perceive" is said in two ways, just like "that by which we know." By the latter we mean either knowledge or the soul, since we say we know by each of these. Similarly with "that by which we are healthy": it is either health or some part of the body, or even the whole body. Of these, knowledge and health are a kind of shape and form and account, a sort of actuality of what receives them—knowledge of what is capable of knowing, health of what is capable of health (for the actuality of what acts seems to come about in what is acted on and disposed). And the soul is that by which we primarily live, perceive and think; so it would be an account and form, not matter and subject. For substance is spoken of in three ways, as we said: as form, as matter, and as what is made of both; and of these, matter is potentiality and form actuality. Since what is made of both is the thing with a soul, the body is not the actuality of the soul; rather the soul is the actuality of some body. That is why those who think that the soul neither exists without a body nor is a body have the right idea. It is not a body, but something belonging to a body; and so it is present in a body, and in a body of a particular kind—not as our predecessors had it, fitting it into a body without further specifying which body or of what kind, even though it evidently is not the case that any chance thing receives any chance thing. And this is just what reason would lead us to expect: the actuality of each thing naturally comes to be in what is potentially that thing, in its own proper matter. It is clear from this, then, that

the soul is a kind of actuality and account of what has the potentiality to be of this sort.

THE CAPACITIES FORM A SERIES

Aristotle shows that the soul's capacities form a series, each higher one presupposing those below it.

Of the capacities of the soul we have mentioned, some living things have all of them, as we said, others some of them, and some only one. The capacities we mentioned were the nutritive, the desiring, the perceptive, the locomotive, and the capacity for thought. Plants have only the nutritive capacity; other things 414b have both this and the perceptive. And if the perceptive, then the desiring too. For desire comprises appetite, spirit and wish; all animals have at least one of the senses, touch; whatever has perception also has pleasure and pain, and the pleasant and the painful; and whatever has these also has appetite, since appetite is desire for the pleasant. Further, animals perceive food, since touch is the sense of food: all animals are nourished by dry and wet and hot and cold things, and the sense of these is touch, while the other objects of perception bear on food only incidentally. For sound, color and smell contribute nothing to nourishment, and flavor is one of the objects of touch. Hunger and thirst are appetites—hunger for what is dry and hot, thirst for what is cold and wet—and flavor is a kind of seasoning of these. We must clarify these matters later; for now let it be enough to say that animals that have touch also have desire. Whether they have imagination is unclear; that must be examined later. Some living things have, in addition to these, the capacity for locomotion, and others also the capacity for thought, and intellect—human beings, for instance, and anything else there may be of that kind or even more valuable. Clearly, then, there would be one account of soul in the same way as there is one of figure. In that case there is no figure apart from the triangle and those that follow it in order, and in this case no soul apart from those we have mentioned. Even for figures there could be a common account

that fits them all but is peculiar to none. And likewise for the kinds of soul we have mentioned. So it is ridiculous, in this case and in others, to look for the common account—one that is not the proper account of any of the things there are, nor corresponds to the proper, indivisible species—while neglecting an account of that proper kind. The situation with the soul is much like that with figures: in both figures and living things, what comes earlier in the series is always present potentially in what follows—the triangle in the quadrilateral, for instance, and the nutritive capacity in the perceptive. So we must ask case by case what the soul of each thing is—what the soul of a plant is, for instance, and what that of a human being or a beast. And we must consider why they are [415a] arranged in this series. Without the nutritive capacity there is no perceptive one; but in plants the nutritive is separated from the perceptive. Again, without touch none of the other senses is present, but touch is present without the others: many animals have neither sight nor hearing, nor any sense of smell at all. Among those that perceive, some have the capacity for locomotion and some do not. Last and fewest have reasoning and thought. For among perishable things, those that have reasoning have all the other capacities as well, but not all that have each of those have reasoning: some do not even have imagination, while others live by imagination alone. Contemplative intellect is another story. It is clear, then, that the account of each of these is also the most appropriate account of the soul.

NUTRITION AND REPRODUCTION

Aristotle argues that the soul is the cause of the living body and analyzes nourishment and reproduction.

Anyone who is going to investigate these must grasp what each of them is, and then go on to inquire about the things connected with them and about the rest. But if we are to say what each of them is—what the thinking capacity is, say, or the perceptive, or the nutritive—we must first say what thinking is and what per-

ceiving is; for activities and actions are prior in account to capacities. And if so, and if their objects must be studied even before them, then for the same reason we should first reach a determination about those objects—nourishment, the object of perception, and the object of thought. So we must speak first about nourishment and reproduction. For the nutritive soul belongs to the others too, and it is the first and most widely shared capacity of soul, the one in virtue of which all living things have life. Its functions are reproducing and using nourishment. For the most natural of functions for living things—those that are fully developed and not defective, and do not come into being spontaneously—is to make another thing like itself, an animal an animal, a plant a plant, so that they may share in the everlasting and the divine as far as [415b] they can. All things desire that, and it is for its sake that they do whatever they do by nature. (That for the sake of which is twofold: the goal aimed at, and the one for whose benefit.) Since, then, they cannot share in the everlasting and the divine by continuous existence, because nothing perishable can remain the same and one in number, each shares in it in the way it can, some more and some less; and what persists is not the thing itself but something like it, not one in number but one in form. The soul is the cause and principle of the living body. These terms are spoken of in many ways; and the soul is likewise a cause in three of the ways we have distinguished. It is the source of motion, it is that for the sake of which, and it is the cause as the substance of bodies that have souls. That it is a cause as substance is clear. For substance is the cause of being for all things; for living things, being is living; and the cause and principle of living is the soul. Further, actuality is the account of what is potentially. It is evident, too, that the soul is a cause as that for the sake of which. For just as intellect acts for the sake of something, so does nature, and this is its end.[3] In animals the soul is this kind of thing, and it is so by nature. For all natural bodies are instruments of the soul—plants' bodies as well as

3 Aristotle elsewhere distinguishes four kinds of cause: matter, form, the source of motion, and the end for the sake of which.

animals'—since they exist for the sake of the soul. (That for the sake of which is twofold: the goal aimed at, and the one for whose benefit.) Moreover, the soul is also the first source of locomotion, though this capacity does not belong to all living things. Alteration and growth, too, depend on the soul. For perception seems to be a kind of alteration, and nothing perceives that has no soul. The same goes for growth and decay: nothing naturally decays or grows without being nourished, and nothing is nourished that does not share in life. Empedocles was wrong to add that growth in plants happens downward, as they take root, because earth naturally moves that way, and upward because 416a fire likewise moves that way. He does not even understand up and down correctly. Up and down are not the same for all things as for the universe: rather, as the head is in animals, so are the roots in plants—if we are to call organs different or the same according to their functions. Besides, what holds fire and earth together as they move in opposite directions? They will be torn apart unless there is something to prevent it; and if there is, that is the soul, the cause of growth and nourishment. Some people think that the nature of fire is, without qualification, the cause of nourishment and growth, since fire appears to be the only body, or the only element, that is nourished and grows. So one might suppose that in plants and animals too it is fire that does the work. But though it is in a way a contributing cause, it is not the cause without qualification; the soul is, rather. For the growth of fire goes on without limit, as long as there is fuel, whereas all things that are naturally constituted have a limit and a proportion of size and growth. These belong to soul, not to fire—to the account rather than to the matter. Since the same capacity of the soul is both nutritive and reproductive, we must first give an account of nourishment; for it is by this function that this capacity is marked off from the others. Nourishment is thought to be contrary for contrary—not every contrary for every other, but those contraries that not only come to be from each other but also make each other grow. Many things come to be from each other without all of them being quantities: the

healthy, for instance, from the sick. And even those contraries do not seem to be nourishment for each other in the same way: water is nourishment for fire, but fire does not nourish water. It is above all among the simple bodies, then, that one thing seems to be nourishment and the other what is nourished. But there is a puzzle here. Some say that like is nourished by like, just as it also grows by like. Others, as we said, think the reverse—that contrary is nourished by contrary—on the grounds that like is not affected by like, whereas food changes and is digested, and every change is into the opposite or into what is intermediate. Again, food is affected in some way by what is nourished, but what is nourished is not affected by the [416b] food, just as the carpenter is not affected by his material, but it by him; the carpenter only changes from inactivity to activity. And it makes a difference whether food is what is added at the end or what is added at the start. If it is both—the one undigested, the other digested—then it would be possible to speak of food in both ways. Insofar as it is undigested, contrary is nourished by contrary; insofar as it is digested, like by like. So it is clear that both sides are in a way right and in a way wrong. Since nothing is nourished that does not share in life, what is nourished must be the body that has soul, insofar as it has soul; so food too is relative to what has soul, and not incidentally. Being food and being a cause of growth are different. Insofar as what has soul is a quantity, food makes it grow; insofar as it is a particular thing and a substance, it is food. For it preserves the substance, and the thing exists as long as it is nourished. And it brings about generation—not of the thing nourished, but of another like it; for the thing's substance already exists, and nothing generates itself, it only preserves itself. So this principle of the soul is a capacity of such a kind as to preserve what has it, as such, while food equips it to be active. That is why, deprived of food, it cannot exist. There are three things: what is nourished, that by which it is nourished, and what nourishes. What nourishes is the primary soul; what is nourished is the body that has it; and that by which it is nourished is the food. Since it is right to name

everything from its end, and the end is to generate another like itself, the primary soul would be the one that generates another like itself. That by which the body is nourished is twofold, just as that by which one steers is twofold—the hand and the rudder: the one both moves and is moved, the other only moves. All food must be capable of being digested, and what brings about digestion is heat; that is why everything with soul has warmth. We have now said in outline what nourishment is; it must be clarified later, in the discussions proper to it.

PERCEPTION AS BEING AFFECTED

Aristotle explains perceiving as a passage from potentiality to actuality and distinguishes kinds of potentiality.

With these points settled, let us speak in general about all perception. Perception consists in being moved and affected, as has been said; for it seems to be a kind of alteration. Some say, too, that like is affected by like. [417a] How this is possible or impossible we have explained in our general discussion of acting and being affected. There is a puzzle why there is no perception of the senses themselves, and why they do not produce perception without external objects, even though fire, earth, and the other elements are present in them—and it is of these, either in themselves or through their attributes, that there is perception. It is clear, then, that the perceptive capacity is not in actuality but only in potentiality. That is why it is like the combustible, which does not burn of itself, without something to set it burning; otherwise it would set itself alight and would have no need of fire that is actually fire. We speak of perceiving in two ways: we say that what has the capacity to hear and see hears and sees, even if it happens to be asleep, and we also say it of what is already exercising that capacity. So perception too would be spoken of in two ways, one potential, the other actual. So too with perceiving: there is potential perceiving and actual perceiving. First, then, let us speak as though being affected, being moved, and being active were the same; for motion is a kind of activity,

though an incomplete one, as has been said elsewhere. Everything is affected and moved by something capable of acting and in actuality. That is why in one way a thing is affected by what is like it, and in another by what is unlike, as we said: while it is being affected it is unlike, but once it has been affected it is like. We must also draw distinctions concerning potentiality and actuality, since so far we have been speaking of them without qualification. In one sense something is a knower in the way we might call a human being a knower, because human beings belong to the kind of things that know and have knowledge. In another sense we call someone a knower who already has literacy. Each of these is capable, but not in the same way: the first because his kind—his matter—is of the right sort; the second because he can contemplate when he wishes, if nothing external prevents him. And the one who is already contemplating is a knower in actuality, and knows, in the full sense, this particular A. The first two, then, are both knowers potentially. But the first becomes a knower actually by being altered through learning, often changing from a contrary state, while the second passes in another way from having perception [417b] or literacy without exercising it to exercising it. Being affected is not simple either. In one sense it is a kind of destruction by the contrary. In another it is rather the preservation of what is potentially by what is actually and is like it, in the way a potentiality is related to its actuality. For what has knowledge comes to contemplate, and this is either not an alteration at all (since the development is into itself and into actuality) or a different kind of alteration. That is why it is not right to say that someone who thinks is altered when he thinks, any more than a builder when he builds. So what leads something from being potentially to actuality in the case of thinking and understanding should rightly be called not teaching but something else. And what learns and acquires knowledge from being potentially, under the agency of something that is in actuality and able to teach, should either not be said to be affected at all, as has been said, or else there are two kinds of alteration: the change toward

privative conditions, and the change toward states and toward one's nature. In what can perceive, the first change is brought about by the parent; once it has been born, it already has perceiving in the way one has knowledge. And actual perceiving is spoken of in the same way as contemplating. But there is a difference: in perception, the things that produce the activity are external—the visible, the audible, and likewise the other objects of perception. The reason is that actual perception is of particulars, while knowledge is of universals, and these are in a way in the soul itself. That is why thinking is up to oneself, whenever one wishes, but perceiving is not; the object of perception has to be there. It is the same with the kinds of knowledge that deal with objects of perception, and for the same reason: objects of perception are particular and external. But there may be an occasion later to make these matters clear. For now, let this much be settled: what is called potential is not simple. There is the sense in which we might say that a child can be a general, and the sense in which we say it of someone of the right age; and that is how it is [418a] with the perceptive capacity. Since there is no name for the difference between these, though we have established that they are different and how they differ, we have to use "being affected" and "being altered" as if they were the proper terms. What can perceive is potentially such as the object of perception already is in actuality, as has been said. So while it is being affected it is not like it, but once it has been affected it has been made like it and is such as that object is.

THREE KINDS OF OBJECT OF PERCEPTION

Aristotle distinguishes the special, the common and the incidental objects of perception.

We must speak about each sense, but first about the objects of perception. "Object of perception" is said in three ways. Two of these we say are perceived in themselves, and one incidentally. Of the two, one is special to each sense, the other common to all. By "special" I mean what cannot be perceived by another sense

and about which it is impossible to be deceived: sight is of color, hearing of sound, taste of flavor. Touch has several distinct kinds of object. But each sense at least discerns its own objects, and is not deceived that there is color or that there is sound, but only about what the colored thing is or where it is, or what the sounding thing is or where it is. Such things, then, are called special to each sense. The common objects are motion, rest, number, shape, and size; for these are special to no sense but common to all—some motion, for instance, is perceptible both by touch and by sight. Something is called an object of perception incidentally if, for instance, the white thing were the son of Diares. One perceives him incidentally, because he happens to belong to the white thing that one perceives. That is why one is not affected at all by the object of perception as such. Of the things perceptible in themselves, it is the special objects that are objects of perception in the strict sense, and it is to these that the very being of each sense is naturally directed.[4]

SIGHT, COLOR AND LIGHT

Aristotle explains color, the transparent medium, and light as the actuality of the transparent.

What sight is of is the visible. What is visible is color, and also something that can be described in words but happens to have no name; what we mean will become clearest as we go on. The visible is color, and color is what lies on the surface of what is visible in itself—"in itself" not by definition, but because it has within itself the cause of its being visible. Every color 418b is capable of setting in motion what is actually transparent, and this is its nature. That is why it is not visible without light; every color of every thing is seen in light. So we must first say what light is. There is, then, such a thing as the transparent. By "transparent" I mean what is visible, but not visible in itself, to put it simply, but through the color of something else. Air, water, and many solids are like this. For it is not as water or as air that they are

4 Diares is otherwise unknown; the name simply serves as an example.

transparent, but because there is a certain nature present in both of them, the same one that is also present in the everlasting body above. Light is the activity of this, of the transparent as transparent. Where this is present only potentially, there is darkness. Light is, as it were, the color of the transparent, when it is actually transparent through the agency of fire or of something like the body above; for this too has something that is one and the same as fire.[5] We have said, then, what the transparent is and what light is: it is not fire, nor any body at all, nor an effluence from any body (for then it too would be a body of a kind), but the presence of fire or something of that sort in the transparent; for two bodies cannot be in the same place at once. Light is thought to be the contrary of darkness. Darkness is the privation of this sort of state from the transparent, so it is clear that light is its presence. Empedocles was wrong, then—and so is anyone else who has said the same—in holding that light travels and at some moment comes to be between the earth and what surrounds it without our noticing. This goes against both the truth of reason and the appearances. Over a small distance it might go unnoticed, but that it should go unnoticed all the way from east to west is too much to ask. What can receive color is the colorless, and what can receive sound is the soundless. The colorless is the transparent, and the invisible or barely visible, which is what the dark seems to be. The transparent is like this—not when it is actually transparent, but when it is potentially so; for the same nature is sometimes darkness and sometimes light. Not everything is visible in light, but only the proper color of each thing. Some things are not seen in light but produce perception in darkness—things that appear fiery and shining (there is no single name for these), such as fungus, horn, and the heads, scales, and eyes of fish. But the proper color of none of these is seen. Why these things are seen is another story. 419a For now this much is clear: what is seen in light is color. That is why it is not seen without light. For this is just what it is to be color:

5 The "body above" is the substance of the heavens, which Aristotle holds to be a fifth element distinct from earth, water, air and fire.

to be capable of setting in motion what is actually transparent; and the actuality of the transparent is light. There is clear evidence of this: if you put something colored right on the eye, you will not see it. Rather, the color sets in motion the transparent—the air, say—and this, being continuous, sets the sense organ in motion. Democritus is wrong to think that if the space in between were empty, one could see precisely even an ant in the sky. That is impossible. Seeing occurs when what can perceive is affected in some way. It cannot be affected by the seen color itself, so it must be affected by what is in between; hence there must be something in between. If it were empty, nothing at all would be seen, let alone seen precisely. We have now said why color must be seen in light. Fire is seen in both, in darkness and in light, and necessarily so, since it is fire that makes the transparent transparent. The same account holds for sound and smell. Neither of them produces perception by touching the sense organ; rather, smell and sound set the medium in motion, and this in turn moves each of the two sense organs. If you place the sounding or smelling thing right on the sense organ, it will produce no perception. With touch and taste it is the same, though it does not appear so; the reason will become clear later. The medium for sounds is air; the medium for smell has no name. For there is a certain affection common to air and water, and as the transparent is to color, so what is present in both of these is to what has smell; for aquatic animals too [419b] evidently perceive smell. But human beings, and those land animals that breathe, cannot smell without breathing in. The reason for this too will be given later.

SOUND, HEARING AND VOICE

Aristotle explains how sound arises from a blow in air, how we hear, and what voice is.

Now let us first settle the questions about sound and hearing. Sound is of two kinds: one is an activity, the other a potentiality. Some things, we say, do not have sound—a sponge, for instance,

or wool—while others do, such as bronze and whatever is solid and smooth, because they can make a sound; that is, they can produce actual sound in what lies between them and the hearing. Actual sound always comes about from something against something, in something; for it is a blow that produces it. That is why sound cannot arise when there is only one thing: what strikes and what is struck are different, so what sounds, sounds against something. And there is no blow without movement. As we said, sound is not the striking of just any things. Wool makes no sound when struck, but bronze does, and so does anything smooth and hollow—bronze because it is smooth, while hollow things, by reverberation, produce many blows after the first, since what has been set in motion cannot get out. Further, sound is heard in air and in water, though less so. But it is not air or water that is responsible for sound; there must be a striking of solid things against each other and against the air. This happens when the air, on being struck, holds together and is not dispersed. That is why it sounds if it is struck quickly and forcefully: the movement of the striker must outrun the breaking up of the air, as if one were to strike a heap or a stream of sand while it was moving fast. An echo occurs when air has been made into a single mass by the vessel that bounds it and keeps it from being dispersed, and other air is driven back from it like a ball. It seems that echo always occurs, though not distinctly, since the same thing happens with sound as with light. Light too is always reflected (otherwise there would not be light everywhere, but darkness outside the sunlit area); but it is not always reflected as it is from water or bronze or some other smooth thing, so as to produce a shadow, by which we mark the boundary of light. The void is rightly said to be responsible for hearing. For air seems to be a void, and it is air that makes us hear, when it is moved as one continuous mass. But because it is crumbly, 420a it gives out no sound unless what is struck is smooth. In that case the air becomes a single mass all at once, because of the surface; for the surface of a smooth thing is one. So what can make a sound is what can set in motion a single

mass of air continuous as far as the hearing; and hearing is naturally united with air. Because the organ is in air, when the air outside is moved it moves the air inside. That is why an animal does not hear with every part of it, and why the air does not pass in everywhere: the part that is to be moved and has soul does not contain air everywhere. Air in itself is soundless, because it is easily dispersed; but when it is prevented from dispersing, its movement is sound. The air in the ears is built in so as to be unmoving, so that it may perceive precisely all the differences of motion. That is why we hear even in water: the water does not get in to the air that is naturally united with the ear, nor even into the ear, because of its spirals. When this does happen, one does not hear; nor if the membrane is damaged, just as one does not see when the skin over the pupil is damaged. A sign of whether one can hear or not is that the ear always resonates, like a horn; for the air in the ears always moves with a motion of its own, whereas sound is foreign to it and not its own. And this is why people say that we hear with what is empty and resonant: because we hear with what holds air bounded off. Does the thing struck make the sound, or the striker? Or both, but in different ways? For sound is a motion of what can be moved in the way that things rebound from smooth surfaces when someone strikes them. As has been said, not everything makes a sound when it strikes or is struck—for instance, if a needle strikes a needle. What is struck must be even, so that the air rebounds and vibrates as a mass. The differences between sounding things are revealed in actual sound; for just as colors are not seen without light, so the sharp and the heavy in pitch are not heard without sound. These terms are used by metaphor from the objects of touch: the sharp moves perception a great deal in a short time, the heavy a little in a long time. It is not that the sharp is fast and the heavy slow; rather, the motion of the one is of that kind because of speed, and of the other because of slowness. [420b] It seems analogous to the sharp and the blunt in touch: the sharp as it were stabs, while the blunt as it were pushes, because the one moves in a short time and the other in a long

time, so that the one turns out to be fast and the other slow. Let this much be settled about sound. Voice is a kind of sound made by something with soul. Nothing without soul has voice; it is only by resemblance that such things are said to have voice—the pipe, for instance, and the lyre, and other soulless things that have range, melody, and articulation, since voice seems to have these too. Many animals have no voice, such as the bloodless ones and, among those with blood, fish. And this is reasonable, if sound is a kind of motion of air. The fish that are said to have voice, like those in the Achelous, make sound with their gills or some other such part. Voice is sound made by an animal, and not with just any part. But since everything that sounds does so when something strikes something, in something, and this is air, it is reasonable that only those animals that take in air should have voice. For nature uses the breath it has already taken in for two tasks, just as it uses the tongue both for taste and for speech. Of these, taste is necessary (which is why more animals have it), while expression is for the sake of living well. In the same way nature uses breath both for inner warmth, as something necessary (the reason will be given elsewhere), and for voice, so that there may be living well.[6] The organ of breathing is the pharynx, and the part for whose sake this part exists is the lung; for it is by this part that land animals have more heat than the others. The region around the heart is also the first to need breathing. That is why air must enter when one breathes in. So voice is the striking of the inhaled air, by the soul in these parts, against what is called the windpipe. For not every sound an animal makes is voice, as we said (one can also make sound with the tongue, or as people do when they cough). What strikes must have soul, and must strike with some imagination; for voice is a sound that signifies something, and not simply a sound of the inhaled air, as a cough is. 421a Rather, with this air the animal strikes the air in the windpipe against the windpipe. A sign of this is that one cannot use one's voice while breathing in or breathing out, but only while holding one's breath; for it is

6 The Achelous is a river in western Greece.

by holding the breath that one produces this motion. It is also clear why fish are voiceless: they have no pharynx. They lack this part because they do not take in air or breathe. Why that is so is another story.

SMELL

Aristotle discusses the weakness of human smell, kinds of odor, and how animals smell through a medium.

Smell and its object are harder to define than the things discussed so far; for it is not clear what sort of thing smell is, in the way that it is clear what sound or color is. The reason is that we do not have this sense in a precise form; it is worse in us than in many animals. Human beings smell poorly, and perceive none of the objects of smell without their being painful or pleasant, which shows that the sense organ is not precise. It is reasonable to think that hard-eyed animals perceive colors in this way too, and that the differences among colors are not distinct to them except as frightening or not frightening.[7] That is how the human race is with smells. Smell seems to be analogous to taste, and the kinds of flavor to the kinds of smell; but our taste is more precise, because it is a kind of touch, and in touch human beings have their most precise sense. In the other senses they fall far behind many animals, but in touch they are far more precise than the rest. That is why the human being is the most intelligent of animals. A sign of this is that within the human race too, people are naturally gifted or ungifted according to this sense organ and nothing else: those with hard flesh are ungifted in thought, those with soft flesh gifted. Just as flavor may be sweet or bitter, so may smells. But some things have a corresponding smell and flavor—I mean, for instance, a sweet smell and a sweet flavor—while others have the opposite. Likewise, a smell may be pungent, astringent, sharp, or rich. But, as we said, because smells are not very distinct, as flavors are, they have taken their 421b names from flavors, by the resemblance of the things: the

7 Animals with hard, lidless eyes, such as insects and crustaceans.

sweet smell from saffron and honey, the pungent from thyme and the like, and similarly with the rest. Just as hearing and each of the other senses is of its object and what is not its object —hearing of the audible and the inaudible, sight of the visible and the invisible—so smell is of the smellable and the unsmellable. Something is unsmellable either because it cannot have smell at all, or because it has only a slight or faint smell. The untastable is spoken of in the same way. Smell too operates through a medium, such as air or water; for aquatic animals too seem to perceive smell—both those with blood and the bloodless —just as those in the air do. Some of these too come from far off toward their food when they catch its scent. So there seems to be a puzzle, if all animals smell in the same way, while human beings smell when breathing in, but when not breathing in—when breathing out or holding their breath—do not smell, whether from far or near, not even if the thing is placed right inside the nostril. That what is placed right on the sense organ is not perceived is common to all animals; but not perceiving without breathing in is peculiar to human beings. This is clear to anyone who tries it. So bloodless animals, since they do not breathe, would have some other sense besides those we have named. But that is impossible, if it is smell that they perceive; for perception of the smellable, of the foul and the fragrant, is smell. Further, they are evidently destroyed by the same strong smells as human beings are, such as bitumen, sulfur, and the like. They must, then, smell, but not by breathing. It seems that in human beings this sense organ differs from that of the other animals, just as our eyes differ from those of hard-eyed animals. Ours have a screen, a kind of sheath—the eyelids—and unless we move them or draw them back we do not see. The hard-eyed animals have nothing of this sort, but see straightaway whatever happens in the transparent. In the same way, then, the organ of smell is [422a] uncovered in some animals, like the eye, while in those that take in air it has a covering, which is drawn back when they breathe in, as the veins and passages widen. And that is why animals that breathe do not smell in water; for they must

breathe in to smell, and this cannot be done in water. Smell belongs to the dry, as flavor belongs to the moist; and the organ of smell is potentially of this kind.

TASTE

Aristotle explains that taste is a kind of touch, works through moisture, and lists the kinds of flavor.

The tastable is something tangible; and this is why it is not perceptible through a medium that is a foreign body—nor is the object of touch. And the body in which the flavor is, the tastable, has the moist as its matter, and this is something tangible. That is why, even if we lived in water, we would perceive something sweet thrown into it; but the perception would not reach us through the medium, but by the sweet's being mixed with the moisture, as with a drink. Color, by contrast, is not seen in this way, by being mixed, nor by effluences. So nothing serves as a medium here; but as color is the visible, so flavor is the tastable. Nothing produces a perception of flavor without moisture; it must have moisture actually or potentially, as salt does, since it dissolves easily and melts together with the tongue. Sight is of both the visible and the invisible (darkness is invisible, yet sight discerns this too), and also of what is too bright (for this too is invisible, though in a different way from darkness). Likewise hearing is of sound and silence, the one audible and the other not, and also of loud sound, as sight is of what is bright; for just as a faint sound is in a way inaudible, so too is a loud and violent one. Something is called invisible in one sense absolutely, as "impossible" is used in other cases; in another sense, when it is of a nature to have something but does not have it, or has it poorly, as we speak of "footless" or "stoneless." So too, then, taste is of the tastable and the untastable—the latter being what has a slight or poor flavor, or one destructive of taste. [422b] The drinkable and the undrinkable seem to be a starting point; both are a kind of taste, but the one is bad and destructive of taste, the other natural. The drinkable is common to touch and taste.

Since the tastable is moist, its sense organ must be neither actually moist nor incapable of being moistened; for taste is affected in some way by the tastable, as tastable. So the organ of taste must be something that can be moistened while being preserved, but is not itself moist. A sign of this is that the tongue does not perceive when it is very dry or very wet. For then there is contact with the moisture that was there first, as when someone who has first tasted a strong flavor then tastes another; and as to the sick everything seems bitter, because they perceive with a tongue full of that sort of moisture. The kinds of flavor, as with colors, are these. The simple ones are contraries: sweet and bitter. Next to the one comes oily, next to the other salty. Between these come pungent, harsh, astringent and sour. These seem to be roughly all the differences among flavors. So what can taste is what is potentially of this kind, and what is tasted is what makes it actually so.

TOUCH

Aristotle asks whether touch is one sense, argues that flesh is its medium, and locates its organ inside.

The same account holds for the tangible and for touch. If touch is not one sense but several, then the tangible objects of perception must also be several. There is a difficulty here: are they several or one? And what is the sense organ for touch, the one that perceives the tangible? Is it flesh (and in other animals what corresponds to flesh), or not? Is flesh, rather, the medium, while the primary sense organ is something else, inside? For every sense seems to deal with one pair of contraries—sight with white and black, hearing with high and low, taste with bitter and sweet—but the tangible contains many pairs of contraries: hot and cold, dry and wet, hard and soft, and others of this sort. To this difficulty, at least, there is a kind of solution: the other senses also have several pairs of contraries. In voice, for example, there is not only high and low pitch but also loudness and softness, smoothness and roughness, and other things of this kind; and

there are other differences of this sort in color too. But what the single underlying object is for touch, as sound is for hearing, is not clear. Is the sense organ inside, or is it 423a simply the flesh? The fact that perception occurs the moment things are touched seems to be no evidence. For as things are, if someone were to make a sort of membrane and stretch it around the flesh, the person would still register the perception immediately on contact, just the same; yet clearly the sense organ is not in the membrane. And if the membrane had grown on naturally, the perception would pass through even faster. So this part of the body seems to be in the condition we would be in if air had grown naturally all around us. We would then think that we perceived sound, color and smell with some one thing, and that sight, hearing and smell were a single sense. As it is, because the media through which the motions travel are separate, the sense organs just mentioned are evidently different. In the case of touch this is at present unclear. For a body that has a soul cannot be composed of air or water; it has to be something solid. What remains is that it is a mixture of earth and these, which is what flesh and its counterpart tend to be. So the body must be the medium for what perceives by touch, grown onto it, and it is through this medium that the perceptions occur, several as they are. Touch on the tongue shows that they are several: the tongue perceives all tangible qualities with the same part with which it perceives flavor. Now if the rest of the flesh also perceived flavor, taste and touch would seem to be one and the same sense; as it is, they are two, because the relation does not run both ways. One might raise a difficulty here. Every body has depth, which is the third dimension; and when there is a body between two bodies, they cannot touch each other. What is fluid is not without body, nor is what is wet; it must be water or contain water. So things that touch each other in water, since their surfaces are not dry, must have water between them, with which their outer edges are soaked. If this is true, it is impossible for one thing to touch another in water. The same holds in air: air is related to things in air as water is to things in water. But this

escapes our notice more, just as animals living in water fail to notice [423b] whether a wet thing is touching a wet thing. Is perception of all objects, then, alike, or is it different for different ones, as it now seems that taste and touch work by contact while the other senses work at a distance? That is not so. We perceive hard and soft, too, through other things, just as we do what can sound, what is visible and what can be smelled. The difference is that the latter are perceived from far off and the former from close by. That is why it escapes our notice: we perceive everything through a medium, but in these cases this goes unnoticed. And yet, as we said earlier too, even if we perceived all tangible things through a membrane without noticing that it separated us from them, we would be in the same position as we are now in water and in air: we think we are touching the things themselves and that nothing is in between. But the tangible differs from what is visible and what can sound. We perceive those because the medium acts on us, whereas we perceive tangible things not by the medium but together with the medium, like a man struck through his shield. It was not the shield, once struck, that hit him; both happened to be struck together. In general, flesh and the tongue seem to be related to the sense organ just as air and water are related to sight, hearing and smell—each of them in the same way as each of those. If the sense organ itself is touched, perception would occur in neither case—just as if someone placed a white body on the surface of the eye. This also makes it clear that what perceives the tangible is inside. For then the same thing would happen as with the other senses: things placed on the sense organ are not perceived, but things placed on the flesh are; so flesh is the medium for what perceives by touch. The tangible qualities, then, are the distinguishing features of body as body—I mean the features that mark out the elements: hot and cold, dry and wet, which we discussed earlier in our work on the elements. The sense organ for them, the organ of touch, in which what is called touch primarily resides, is the part that is potentially such as they are.

424a For perceiving is a way of being affected.[8] So what acts on it makes it actually such as the agent itself is, since it was so potentially. That is why we do not perceive what is exactly as hot or cold, or as hard or soft, as we are, but only what exceeds us: the sense is a sort of mean between the contraries in the objects of perception. And this is why it discriminates the objects of perception. The mean is able to discriminate, since relative to each extreme it becomes the other. And just as what is to perceive white and black must be neither of them actually but both potentially, so too with the other senses: in the case of touch it must be neither hot nor cold. Further, just as sight was in a way of both the visible and the invisible, and the other senses likewise of their pairs of opposites, so too touch is of the tangible and the intangible. The intangible is both what has an altogether slight tangible quality, as is the case with air, and the excesses of tangible qualities, such as those that destroy. So we have now spoken in outline about each of the senses.

RECEIVING FORM WITHOUT MATTER

Aristotle explains perception as taking on perceptible forms without matter, as wax takes a ring's impression.

In general, for all perception, we must grasp that a sense is what receives perceptible forms without the matter. Wax, for instance, receives the impression of a signet ring without the iron or the gold: it takes on the gold or bronze impression, but not as gold or bronze. Similarly, the sense for each thing is affected by what has color, flavor or sound, but not insofar as each of those things is called what it is; rather insofar as it is of a certain quality, and according to its proportion. The primary sense organ is that in which such a capacity resides. The organ and the capacity are the same thing, but what it is to be each of them is different. What perceives would be a magnitude; but what it is to be capable of perceiving is not a magnitude, nor is the sense. The sense is a kind of proportion and capacity of that

8 The reference is to Aristotle's *On Generation and Corruption,* Book 2.

magnitude. It is also clear from this why excessive objects of perception destroy the sense organs. If the motion is too strong for the organ, the proportion is dissolved—and that, we saw, is what the sense is—just as the concord and tuning of strings are destroyed when they are struck too hard. It is clear, too, why plants do not perceive, even though they have a part of soul and are affected in some way by tangible things; they do [424b] get cold and hot. The reason is that they have no mean, nor a principle of the kind that receives the forms of perceptible objects; instead they are affected together with the matter. One might ask whether something that cannot smell could be affected in any way by odor, or something that cannot see by color, and likewise with the others. If the object of smell is odor, then if odor produces anything, it produces smelling. So nothing that cannot smell can be affected by odor, and the same argument applies to the others. Nor can anything that can smell, except insofar as it is capable of perceiving. This is clear in another way too. Light and darkness, sound and odor do nothing to bodies; it is what they are in that does—for example, it is the air accompanying thunder that splits the wood. But tangible qualities and flavors do act on bodies. If they did not, what would inanimate things be affected and altered by? Will the other objects of perception act on bodies too, then? Perhaps not every body can be affected by odor and sound, and those that are affected are indeterminate and do not stay put, like air; for air smells as though it has been affected in some way. What, then, is smelling, over and above being affected? Perhaps smelling is perceiving, whereas air, once affected, quickly becomes perceptible.

Book III

Perception, imagination and thought
Aristotle discusses common perception, imagination, the intellect, and what moves animals.

WHY THERE ARE ONLY FIVE SENSES

Aristotle argues that there is no sixth sense and no special organ for the common objects.

That there is no other sense besides the five—by which I mean sight, hearing, smell, taste and touch—one may be convinced from the following. Suppose that we do in fact have perception of everything that touch perceives (for all the qualities of the tangible as tangible are perceptible to us by touch). Suppose too that, if some sense is missing, some sense organ must also be missing in us. Now whatever we perceive by touching it directly is perceptible by touch, which we do have; and whatever we perceive through media, and not by direct contact, we perceive through the simple bodies—I mean air and water, for example. The situation is this. If several objects of perception that differ in kind are perceived through one medium, then whoever has a sense organ of that material must be able to perceive both. For example, if the sense organ is made of air, air is the medium both of sound and of color. If, on the other hand, there are several media [425a] for the same object—as both air and water are for color, since both are transparent—then someone who has only one of them will perceive what can be perceived through both. Now sense organs are made from only two of the simple bodies, air and water: the pupil is of water, hearing of air, and smell of one or the other. Fire belongs to none of them or is common to

all, since nothing can perceive without warmth. Earth belongs to none, or else is mixed in most of all, and in its own special way, in touch. So it would follow that there is no sense organ apart from water and air. And some animals, as things are, do have these organs. All the senses, then, are possessed by animals that are neither incomplete nor maimed; even the mole evidently has eyes under its skin. So unless there is some other body, and some quality that belongs to none of the bodies here, no sense can be missing. Nor, again, can there be a special sense organ for the common objects of perception, which we perceive by each sense incidentally: motion, rest, shape, size, number, unity. For we perceive all these by motion—size, for example, by motion, and so also shape, since shape is a kind of size. What is at rest we perceive by its not moving; number by the negation of continuity, and also by the special objects, since each sense perceives one thing.[1] So it is clear that there cannot be a special sense for any of these, motion for example. If there were, it would be the way we now perceive the sweet by sight. That happens because we have a sense for both, by which we recognize them when they coincide. Otherwise we would perceive the common objects only incidentally—as we perceive Cleon's son, not as Cleon's son but as white, and this white thing happens to be Cleon's son. But we do in fact have a common perception of the common objects, not an incidental one. So there is no special sense for them; otherwise we would perceive them only in the way described, as we see Cleon's son. The senses perceive one another's special objects incidentally—not as the separate senses they are, but as one—when 425b perceptions of the same thing occur at the same time, as when we perceive that bile is bitter and yellow. It is certainly not the job of some other sense to say that both are one thing. That is also why it is deceived: if something is yellow, it thinks it is bile. One might ask why we have several senses and not just one. Perhaps it is so that the concomitant and common objects, such as motion, size and

1 "Incidentally" is puzzling here, since the next section says the common objects are perceived not incidentally; the text is disputed.

number, should be less likely to escape our notice. If sight were our only sense, and it were a sense of white, they would be more likely to escape our notice, and everything would seem to be the same, because color and size always accompany each other. As it is, since the common objects belong to the object of another sense as well, this makes it clear that each of them is something distinct.

PERCEIVING THAT WE PERCEIVE

Aristotle discusses awareness of perceiving, the shared activity of sense and object, and comparing different senses.

Since we perceive that we are seeing and hearing, it must be either by sight that one perceives that one is seeing, or by another sense. But then the same sense will perceive both sight and the color that is its object. So either two senses will perceive the same thing, or a sense will perceive itself. Further, even if the sense that perceives sight were a different one, either there will be an infinite regress or some sense will perceive itself; so we should grant this to the first one. But there is a difficulty. If perceiving by sight is seeing, and what is seen is color or what has color, then if one is to see what sees, what primarily sees will have color. It is evident, then, that perceiving by sight is not just one thing: even when we are not seeing, it is by sight that we discriminate both darkness and light, though not in the same way. Moreover, what sees is in a way colored, since each sense organ receives the object of perception without the matter. That is why perceptions and imaginings remain in the sense organs even after the objects of perception have gone. The activity of the object of perception and that of the sense are one and the same, but what it is to be each is not the same. I mean, for example, actual sound and actual hearing. One can have hearing and not be hearing, and what has sound is not always sounding. But when what can hear is active and what can sound is sounding, then actual hearing and actual [426a] sound occur together; one might call the first "audition" and the second "sounding." If

motion, acting and being affected are in what is acted on, then the actual sound and the actual hearing must also be in the hearing that is potential. For the activity of what acts and causes motion comes about in what is affected; that is why what causes motion need not itself be moved. The activity of what can sound, then, is sound or sounding, and that of what can hear is hearing or audition; for hearing is twofold, and so is sound. The same account applies to the other senses and their objects. Just as acting and being affected are in what is affected and not in the agent, so too the activity of the object of perception and that of what perceives are in what perceives. In some cases both have names, as with "sounding" and "audition"; in others one of the two has no name. The activity of sight is called "seeing," but that of color has no name; the activity of what can taste is called "tasting," but that of flavor has no name. Since the activity of the object of perception and that of what perceives are one, though what it is to be each is different, hearing and sound in this sense must perish and be preserved together, and likewise flavor and tasting, and the rest. But when they are spoken of as potential, this need not be so. The earlier natural philosophers were wrong about this: they thought nothing was white or black without sight, and there was no flavor without taste. In one way they were right, in another wrong. Perception and the object of perception are each spoken of in two ways, as potential and as actual. What they said holds of the latter, but not of the former. They spoke without qualification about things that are not spoken of without qualification. Now if concord is a kind of voice, and voice and hearing are in one way one and the same and in another way not, and if concord is a proportion, then hearing too must be a kind of proportion. That is why each excess, whether high or low, destroys hearing. Likewise, in flavors, excess destroys [426b] taste; in colors, the very bright or the very dark destroys sight; and in smell, a strong odor, whether sweet or bitter, destroys smell—since the sense is a kind of proportion. That is also why things are pleasant when, pure and unmixed, they are brought within the proportion—sour, sweet

or salty, for example; they are pleasant then. In general, a blend is more of a concord than high or low alone. For touch, it is what can be heated or cooled. The sense is the proportion, and excessive objects cause pain or destroy it. Each sense, then, is of its own underlying object of perception. It is present in the sense organ as sense organ, and it discriminates the differences within its underlying object—sight white and black, taste sweet and bitter—and the same holds for the others. Since we also discriminate white and sweet, and each object of perception, in relation to one another, by what do we perceive that they differ? It must be by perception, since they are objects of perception. This also makes clear that flesh is not the ultimate sense organ; for then what discriminates would have to discriminate by touching the object. Nor can we discriminate by separate means that sweet is different from white: both must be evident to some one thing. Otherwise, even if I perceived one and you the other, it would be evident that they are different from each other. What says that they are different must be one thing, since sweet is different from white. So it is the same thing that says it; and as it says, so it also thinks and perceives. Clearly, then, it is not possible to discriminate separate things by separate means. That it cannot be done at separate times either is clear from the following. Just as it is the same thing that says the good and the bad are different, so too when it says that the one is different, it says that the other is as well; and the "when" is not incidental. I mean: I can say now that something is different without saying that it is different now. But this says it in the other way: it says it now, and says that they are different now. So it says it all at once. What discriminates, then, must be inseparable and discriminate in an inseparable time. But surely it is impossible for the same thing, insofar as it is indivisible and in an indivisible time, to be moved with contrary motions at once. For if something is sweet, it moves perception [427a] or thought in one way, while the bitter moves it in the contrary way, and white in a different way. Is it, then, that what discriminates is at once numerically indivisible and inseparable, but separated in its being? In a way, then, it is

as divisible that it perceives divided things, and in a way as indivisible: it is divisible in its being, but indivisible in place and in number. Or is this impossible? The same indivisible thing can be contraries potentially, but not in its being; in being active it is divided, and it cannot be white and black at once. So it cannot be affected by their forms either, if perception and thought are like that. Rather, it is like what some call a point, which is one and also two, and in that respect divisible.[2] Insofar as it is indivisible, what discriminates is one and acts all at once; insofar as it is divisible, it uses the same point twice at once. Insofar as it uses the boundary as two, it discriminates two things, and they are separate, as for something separated; insofar as it uses it as one, it discriminates by one thing and at once. Let this be our account, then, of the principle in virtue of which we say an animal is capable of perception.

IMAGINATION

Aristotle distinguishes thinking from perceiving and defines imagination as a motion produced by perception.

The soul is defined chiefly by two distinguishing features: motion from place to place, and thinking, discriminating and perceiving. Thinking and understanding seem to be a kind of perceiving too, since in both the soul discriminates and recognizes something among the things that are. Indeed the ancients say that understanding and perceiving are the same. Empedocles, for example, has said, "For humans' wit grows toward what is present," and elsewhere, "whence different thoughts, too, / always come before them." Homer's line "For such is the mind" means the same thing. All these thinkers suppose that thinking is bodily, like perceiving, and that like perceives and understands like, as we explained in our discussion at the begin-

2 The text here is uncertain. A point on a line counts as one in itself but as two when it is the end of one segment and the start of another.

ning.[3] Yet at the same time they ought to have spoken about 427b
being deceived, since this is more characteristic of animals, and the soul spends more time in that state. So it must follow either that everything that appears is true, as some say, or that deception is contact with what is unlike, since that is the contrary of recognizing like by like. But deception about contraries, like knowledge of them, seems to be one and the same. It is evident, then, that perceiving and understanding are not the same: all animals have a share in the one, but few in the other. Nor is thinking the same as perceiving—thinking in which there is being right and not being right, being right being practical wisdom, knowledge and true belief, and not being right their opposites. This too is not the same as perceiving. For perception of the special objects is always true and belongs to all animals, whereas one can think falsely, and thinking belongs to no animal that does not also have reason. Imagination is different from both perception and thought. It does not occur without perception, and without it there is no judgment. That thinking and judgment are not the same is evident. For this affection is up to us whenever we wish: we can put something before our eyes, as people do who place things in memory systems and form images. But believing is not up to us, since it must be either false or true.[4] Further, when we believe that something is terrible or frightening, we are at once affected along with the belief, and likewise if it is reassuring; but in imagination we are like people looking at terrible or reassuring things in a picture. There are also different kinds of judgment itself—knowledge, belief, practical wisdom and their opposites—but the difference between them must be the subject of another discussion. As for thinking: since it is different from perceiving, and part of it seems to be imagination and part judgment, we should first give an account of imagination and then speak about the other. 428a If

3 The Homer line (*Odyssey* 18.136) goes on to say that the mind of mortals is like the day that Zeus brings on.

4 The argument concerns imagination, and many editors think "thinking" in this sentence should read "imagination"; the text is disputed.

imagination is that in virtue of which we say an image occurs to us—and not in any sense we use by metaphor—it is one of the capacities or states by which we discriminate and are right or wrong. These are perception, belief, knowledge and intellect. That it is not perception is clear from the following. Perception is either a capacity or an activity, such as sight or seeing; but something can appear to us when neither of these is present, as in dreams. Next, perception is always present, but imagination is not. And if they were the same in their activity, imagination could belong to all beasts; but it seems not to, for example to the ant, the bee or the grub. Next, perceptions are always true, whereas most imaginings turn out false. Again, when we are accurately engaged with the object of perception, we do not say, "This appears to us to be a man"; we say it rather when we are not perceiving distinctly, and then it may be true or false. And, as we said before, visions appear even to people whose eyes are shut. Nor will it be any of the states that are always right, like knowledge or intellect; for imagination can also be false.[5] It remains, then, to see whether it is belief, since belief can be both true and false. But belief is accompanied by conviction (one cannot believe something without being convinced of what one believes), and no beast has conviction, though many have imagination. Further, every belief is accompanied by conviction, conviction by having been persuaded, and persuasion by reason; and some beasts have imagination but not reason. It is evident, then, that imagination cannot be belief together with perception, nor belief through perception, nor a combination of belief and perception—both for these reasons and because it is clear that the belief would be about nothing other than what the perception is about. I mean that imagination would be the combination of the belief about white and the perception of white; it would certainly not be the combination of a belief about the good and a perception of 428b white. Something's appearing, then, would be believing what one perceives, and not incidentally. But

5 The text is uncertain: some editors read it so that ants and bees do have imagination and only the grub lacks it.

things also appear false when at the same time one holds a true judgment about them. The sun, for example, appears a foot across, yet one is convinced it is larger than the inhabited world. So it follows either that one has thrown away the true belief one had, though the thing itself stayed the same, and without having forgotten it or been persuaded otherwise; or, if one still has it, that the same belief must be both true and false. But a belief would have become false only if the thing had changed without one's noticing. So imagination is neither one of these nor made up of them. But when one thing has been moved, something else can be moved by it. Imagination seems to be a kind of motion, and not to occur without perception, but only in beings that perceive and about things that are perceived. Motion can come about from the activity of perception, and this motion must be similar to the perception. So this motion could neither exist without perception nor belong to beings that do not perceive; its possessor would do and undergo many things in accordance with it; and it could be both true and false. This happens for the following reasons. Perception of the special objects is true, or has the least possible falsehood. Second comes perception that these belong to something as attributes, and here error is already possible: one is not mistaken that something is white, but one can be mistaken as to whether the white thing is this or something else. Third is perception of the common objects, which follow on the things to which the special objects belong as attributes—I mean, for example, motion and size, which are attributes of the objects of perception; it is about these that one is most easily deceived in perception. The motion produced by the activity will differ depending on which of these three kinds of perception it comes from. The first is true while the perception is present; the others may be false whether it is present or absent, and especially when the object of perception is far away. If, then, nothing but 429a imagination has the features we have described, and this is what was said, imagination would be a motion produced by perception in its active state. And since sight is perception in the fullest sense, imagination, *phantasia*,

has taken its name from light, *phaos*, because without light one cannot see. And because imaginings persist and are similar to perceptions, animals do many things in accordance with them: some because they lack intellect, like beasts, and others, like humans, because their intellect is sometimes veiled by emotion, illness or sleep. About imagination, then—what it is and why it exists—let this much be said.

THE INTELLECT

Aristotle argues that intellect is unmixed, has no bodily organ, and is potentially whatever it thinks.

As for the part of the soul by which the soul knows and understands—whether it is separable, or is not separable in magnitude but only in account—we must consider what distinguishes it, and how thinking ever comes about. If thinking is like perceiving, it would be either a way of being affected by the object of thought or something else of this sort. So this part must be unaffected, but receptive of the form, and potentially such as the form without being it; and as the perceptive capacity is related to the objects of perception, so intellect must be related to the objects of thought. Since it thinks all things, then, it must be unmixed, as Anaxagoras says, in order to rule—that is, in order to know. For anything foreign appearing alongside it hinders and obstructs it. So it has no nature of its own except this: that it is potential. So the part of the soul called intellect (by intellect I mean that by which the soul thinks and forms judgments) is actually none of the things that are before it thinks. That is why it is not reasonable for it to be mixed with the body either; for then it would come to have some quality, cold or hot, or would even have an organ, as the perceptive capacity does. As it is, it has none. So those who say that the soul is a place of forms are right—except that it is not the whole soul but the thinking soul, and it is the forms not actually but potentially. That the unaffectedness of the perceptive capacity and that of the thinking capacity are not alike is evident from the sense organs and per-

ception. For perception cannot [429b] perceive after something intensely perceptible: it cannot hear after very loud sounds, for instance, or see or smell after strong colors and smells. But when the intellect has thought something intensely intelligible, it thinks lesser things not less but even more. For the perceptive capacity does not exist without the body, whereas the intellect is separable. And when the intellect has become each of its objects in the way that someone who actually knows is called a knower (this happens when he is able to exercise his knowledge by himself), even then it is still in a way in potentiality, though not in the same way as before learning or discovering. And then it is able to think itself. A magnitude is one thing and being-a-magnitude another, and water one thing and being-water another; so too with many other things, though not with all, since in some cases being-flesh and flesh are the same. So the soul discerns these either with different capacities or with the same capacity differently disposed. For flesh does not exist without matter; like the snub, it is this in this. It is with the perceptive capacity, then, that the soul discerns the hot and the cold, and the things of which flesh is a certain ratio; but it discerns being-flesh with something else, either separate, or related to the perceptive capacity as a bent line is related to itself when straightened out. Again, among things that exist by abstraction, the straight is like the snub, since it comes with extension. But its essence, if being-straight is different from the straight, is discerned by something else: let it be the dyad.[6] So it discerns them with something different, or with the same thing differently disposed. And in general, then, as things are separable from matter, so too are the things that concern the intellect. But one might raise a puzzle. If the intellect is simple and unaffected and has nothing in common with anything, as Anaxagoras says, how will it think, if thinking is a way of being affected? For it is insofar as two things have something in common that one seems to act and the other

6 The "snub" (a snub nose) is Aristotle's stock example of a form that cannot be defined without its matter; "the dyad" alludes to the Platonist view that the essence of a line is the number two.

to be acted on. A further question is whether the intellect is itself an object of thought. For either intellect will belong to the other things too, if it is not an object of thought in virtue of something else and what is thinkable is one in form; or it will have something mixed into it that makes it an object of thought as the other things are. Or rather, being affected in virtue of something in common was dealt with earlier: the intellect is in a way potentially the objects of thought, but actually it is none of them until it thinks. It must be so 430a in the way a writing tablet is when nothing has actually been written on it. That is exactly what happens with the intellect. And it is itself an object of thought, just as its objects are. For in the case of things without matter, what thinks and what is thought are the same: contemplative knowledge and what is known in that way are the same. (Why it is not always thinking is something we must consider.) In things that have matter, each of the objects of thought is present only potentially. So intellect will not belong to them (for intellect is a capacity for such things without their matter), whereas being an object of thought will belong to it.

THE ACTIVE INTELLECT

Aristotle distinguishes an intellect that becomes all things from one that makes all things, as light does.

In all of nature there is, for each kind of thing, something that is its matter (this is what is potentially all the things of that kind), and something else that is the cause and producer, by producing them all, as a craft stands to its material. Since this is so, these differences must be present in the soul as well. And there is one intellect of this sort, by becoming all things, and another by producing all things, as a kind of state, like light; for in a way light too makes what are potentially colors actually colors. And this intellect is separable, unaffected and unmixed, being in its essence activity. For what acts is always more honorable than what is acted on, and the principle than the matter. Actual knowledge is the same as its object. Potential knowledge is prior

in time in the individual, but in general it is not prior in time. But it is not the case that this intellect thinks at one time and not at another. Only when separated is it just what it is, and this alone is immortal and everlasting. We do not remember, however, because this is unaffected, whereas the passive intellect is perishable; and without this nothing thinks.

THINKING INDIVISIBLES AND COMBINING THOUGHTS

Aristotle explains how the intellect thinks indivisible objects and how truth and falsehood arise from combination.

The thinking of indivisibles, then, concerns things about which there is no falsehood. Where there is both falsehood and truth, there is already a combining of thoughts as if they were one. Empedocles said that "here sprang up many neckless heads," which were then joined together by Love; in the same way these separate thoughts are combined, for instance "incommensurable" and "the diagonal." And if the thought concerns things that 430b have happened or will happen, one also thinks of the time and combines that in. For falsehood always lies in combination: even if you say that what is white is not white, you have combined not-white with it. One could also call all of these division. At any rate, what is true or false is not only that Cleon is white, but also that he was or will be. What makes each of these into one is the intellect.[7] "Indivisible" has two senses: potentially indivisible or actually indivisible. So nothing prevents one from thinking what is indivisible when one thinks a length; for it is actually undivided, and one thinks it in an undivided time, since the time is divisible and indivisible in just the same way as the length. So one cannot say what one is thinking in each half of the time; for the halves do not exist, unless the length is divided, except potentially. But by thinking each of the halves separately, one divides the time along with them, and then the halves are like lengths in their own right. If, however, one thinks the length

7 Empedocles described an early stage of the world in which separate limbs arose and were later joined together by Love.

as made up of both, one does so in the time that spans both. What is indivisible not in quantity but in form one thinks in an indivisible time and with an indivisible part of the soul. It does so incidentally: not insofar as that with which it thinks, and the time in which it thinks, are divisible, but insofar as they are indivisible. For even in these there is something indivisible, though perhaps not separable, which makes the time and the length one. And this is present alike in everything continuous, both time and length. A point, and every division, and whatever is indivisible in this way, is made known in the way a privation is. The account is similar in the other cases, for instance how one recognizes what is bad or what is black: one recognizes them, in a way, by their contrary. What recognizes must be the contrary potentially, and the contrary must be present in it. But if there is something among the causes that has no contrary, it knows itself, and is in actuality, and is separable. An assertion says something of something, as an affirmation does, and every assertion is true or false. But this is not so with all intellect: the thinking of what a thing is, in the sense of its essence, is true, and does not say something of something. Rather, just as seeing its own proper object is true, while whether the white thing is a man or not is not always true, so it is with all things that are without matter.

THINKING WITH IMAGES

Aristotle compares thinking with perceiving and holds that the soul never thinks without an image.

431a Actual knowledge is the same as its object. Potential knowledge is prior in time in the individual, but in general it is not prior even in time; for everything that comes to be comes from something that actually is. The object of perception evidently makes the perceptive capacity, which was potentially, be actually. For the perceptive capacity is not affected or altered. That is why this is a different kind of change; for change, as we said, is the activity of what is incomplete, whereas activity without

qualification, the activity of what is complete, is something different. Perceiving, then, is like simply saying something, or thinking it. But when the object is pleasant or painful, the soul pursues or avoids it, as if affirming or denying. And being pleased or pained is being active with the perceptive mean toward the good or bad as such.[8] Avoidance and desire, when active, are this same thing, and the capacity for desire and the capacity for avoidance are not different, either from each other or from the perceptive capacity, though their being is different. To the soul capable of thought, images serve as perceptions do. And when it affirms or denies that something is good or bad, it avoids or pursues it. That is why the soul never thinks without an image. Just as the air made the pupil of the eye such-and-such, and the pupil in turn affected something else, and likewise with hearing, the last thing is one, a single mean, though its being is multiple. With what the soul discerns how sweet differs from hot has been said earlier too, but it must also be said in the following way. It is something one, and one in the way a boundary is. It is one by analogy and in number, and it stands to each of the two qualities as they stand to each other. For what difference does it make whether we puzzle over how it discerns things of the same kind, or contraries such as white and black? Let it be that as A, the white, is to B, the black, so C is to D; so the alternate proportion holds too. Now if C and D belonged to one thing, it will be just as with A and B: they are one and the same, though their being is not the same, and similarly with the other pair. The same 431b account holds if A were the sweet and B the white.[9] The thinking capacity, then, thinks the forms in images; and just as what is to be pursued and avoided is determined for it in them, so too, even apart from perception, when it is engaged with images, it is moved. For instance, perceiving a beacon and that it is fire, one recognizes by the common perceptive capacity, on seeing it move, that it means the enemy. At

8 The first two sentences repeat, almost word for word, a passage at 430a; editors disagree about where they belong.

9 The Greek of this passage is disputed in places.

other times, using the images or thoughts in the soul, as if seeing, it calculates and deliberates about what is to come in relation to what is present. And when it declares that something pleasant or painful is there, it avoids or pursues it here, and so in action generally. What is apart from action too, the true and the false, is in the same genus as the good and the bad; but they differ in being so without qualification as against being so for someone. What are called abstractions it thinks as it would think the snub. As snub, it is not thought separately; but as concave, if one actually thought of it so, one would think it without the flesh in which the concave is. In the same way, when it thinks mathematical objects, it thinks them as separate, although they are not separate. In general, the intellect that is actively thinking is the things it thinks. Whether it can think any of the things that are separate when it is not itself separate from magnitude, or not, must be considered later.

THE SOUL IS IN A WAY ALL THINGS

Aristotle sums up: the soul is in a way all things, as the hand is a tool of tools.

Now let us sum up what has been said about the soul, and say again that the soul is in a way all the things there are. For the things there are are either objects of perception or objects of thought; and knowledge is in a way the things known, and perception the things perceived. How this is so needs to be investigated. Knowledge and perception are divided to correspond to their objects: potential knowledge and perception to potential objects, actual to actual. The perceptive and knowing capacities of the soul are potentially these objects, the one the knowable, the other the perceptible. They must be either the things themselves or their forms. Not the things themselves, certainly; for it is not the stone that is in the soul, but its [432a] form. So the soul is like the hand: just as the hand is a tool of tools, so the intellect is a form of forms, and perception a form of objects of perception. And since, as it seems, no thing exists separately apart from per-

ceptible magnitudes, the objects of thought are in the perceptible forms, both the so-called abstractions and all the states and affections of perceptible things. That is why someone who perceived nothing would learn or understand nothing; and whenever one contemplates, one must at the same time contemplate an image, for images are like perceptions, except that they are without matter. But imagination is different from affirmation and denial, since truth and falsehood are a combination of thoughts. But what will distinguish the first thoughts from being images? Or rather, not even the others are images, though they do not occur without images.

WHAT MOVES AN ANIMAL?

Aristotle asks which part of the soul causes locomotion and rules out nutrition, perception and intellect alone.

The soul of animals is defined by two capacities: the capacity for discerning, which is the function of thought and perception, and the capacity for producing motion from place to place. Let this much, then, be settled about perception and intellect. We must now consider what it is in the soul that produces motion: whether it is one part of it, separable either in magnitude or in account, or the whole soul; and if it is a part, whether it is some special part beyond those usually mentioned and those we have discussed, or one of these. A puzzle arises at once: in what sense should we speak of parts of the soul, and how many are there? In a way they seem to be unlimited in number, and not only the ones some people distinguish, the reasoning, spirited and appetitive parts, or, according to others, the part that has reason and the part without reason. For by the very differences by which they separate these, other parts will turn up too, with a greater distance between them than these have. These are the ones we have just been discussing: the nutritive, which belongs to plants and to all animals, and the perceptive, which one could not easily classify either as without reason or as having reason. Then there is the imaginative part, [432b] which is different in being

from all of them; but which of them it is the same as or different from is a great puzzle, if one is going to posit separate parts of the soul. In addition there is the desiring part, which would seem to be different from all of them both in account and in capacity.[10] And it would be absurd to split this part up. For wish arises in the reasoning part, and appetite and spirit in the part without reason; and if the soul is three, there will be desire in each. And now to the question our discussion has reached: what is it that moves the animal from place to place? Motion by way of growth and decline, which belongs to all living things, would seem to be produced by what belongs to all of them, the reproductive and nutritive capacity. Breathing in and out, and sleep and waking, must be examined later, for they too involve much puzzlement. But about motion from place to place we must consider what it is that moves the animal with the motion of travelling. That it is not the nutritive capacity is clear. For this motion is always for the sake of something, and it involves either imagination or desire: nothing moves without desiring or avoiding something, except by force. Besides, plants would then be capable of locomotion and would have some part equipped as an organ for this motion. Nor, similarly, is it the perceptive capacity; for there are many animals that have perception but are stationary and motionless throughout their lives. Now nature neither does anything in vain nor leaves out anything necessary, except in deformed and incomplete creatures; and such animals are complete and not deformed, as is shown by the fact that they reproduce and have a prime and a decline. If so, they would also have the organic parts for travelling. Nor, again, is the reasoning part, what is called intellect, the mover. For contemplative intellect thinks nothing that is to be done, and says nothing about what is to be avoided or pursued, whereas motion always belongs to something that is avoiding or pursuing something. And even when it contemplates something of this kind, it does not thereby command avoidance or pursuit. For instance, it often thinks of something frightening or pleasant, but it does

10 The threefold division into reason, spirit and appetite is Plato's, in the *Republic*.

not command fear; yet the heart [433a] is moved, or, if the thing is pleasant, some other part. Further, even when the intellect gives orders and thought says to avoid or pursue something, the person is not moved, but acts according to appetite, as the uncontrolled person does. And in general we see that someone who has medical knowledge does not by that fact heal, which shows that something other than knowledge is in control of acting according to knowledge. Nor, again, is desire in control of this motion. For people with self-control, though they desire and have appetites, do not do the things they desire, but follow intellect.

DESIRE AS THE SOURCE OF MOTION

Aristotle argues that the object of desire, with practical thought or imagination, moves the animal.

At any rate, these two appear to be what produce motion, desire and intellect, if one counts imagination as a kind of thinking. For people often follow their imaginings against their knowledge, and the other animals have no thinking or reasoning, but they do have imagination. So both of these are capable of producing motion from place to place, intellect and desire. But the intellect in question is the one that reasons for the sake of something, the practical intellect; it differs from contemplative intellect in its end. Every desire too is for the sake of something; for the thing desire is for is the starting point of practical intellect, and the last point it reaches is the starting point of action. So it is reasonable that these two appear to be what produce motion, desire and practical thought. For the object of desire produces motion, and thought produces motion because its starting point is the object of desire. And imagination, when it produces motion, does not do so without desire. So what produces motion is one thing, the object of desire. For if two things, intellect and desire, produced motion, they would do so in virtue of some form they have in common. As it is, intellect evidently does not produce motion without desire (for wish is a desire, and when

someone is moved in accordance with reasoning, he is also moved in accordance with wish), whereas desire produces motion even against reasoning, since appetite is a kind of desire. Intellect, then, is always correct, but desire and imagination can be correct or incorrect. That is why it is always the object of desire that produces motion; but this is either the good or the apparent good. And not every good, but the good that can be achieved in action; and what can be achieved in action is what can also be otherwise. It is clear, then, that it is this kind of capacity of the soul, the one called 433b desire, that produces motion.[11] Those who divide up the parts of the soul, if they divide and separate them by capacities, get a great many: nutritive, perceptive, thinking, deliberative, and desiring as well; for these differ from one another more than the appetitive and spirited parts do. Desires come to be contrary to one another. This happens when reason and appetite are contrary, and it occurs in beings that have a perception of time: intellect urges us to hold back because of what is to come, while appetite urges us on because of what is at hand, since what is pleasant right now appears pleasant without qualification and good without qualification, because appetite does not see what is to come. So the mover will be one in form, the desiring capacity as such, and first of all the object of desire, which produces motion without being moved, by being thought or imagined; but the movers are more than one in number. There are three things: first, what produces motion; second, that by which it produces it; third, what is moved. And what produces motion is twofold: one is unmoved, while the other both produces motion and is moved. The unmoved one is the good that can be achieved in action; what both produces motion and is moved is the desiring capacity (for what is moved is moved insofar as it desires, and desire, insofar as it is active, is a kind of motion); and what is moved is the animal. The organ by which desire produces motion is at this point something bodily, so it must be studied among the functions common to body and soul. For now, to put it in sum-

11 Some manuscripts read "the desiring capacity" instead of "the object of desire."

mary form: what produces motion by means of an organ is found where the beginning and the end are the same, as in a hinge joint. There the convex and the concave are respectively the end and the beginning; so the one is at rest while the other moves, the two being different in account but inseparable in magnitude. For everything is moved by pushing and pulling; so, as in a circle, something must stay fixed, and the motion must start from there. In general, then, as has been said, an animal is capable of moving itself insofar as it is capable of desire; it is not capable of desire without imagination; and all imagination is either rational or perceptual. In the latter the other animals share too.

IMAGINATION, DELIBERATION AND CONFLICTING DESIRES

Aristotle discusses imagination in the simplest animals, deliberative imagination, and how one desire overcomes another.

We must also consider what it is that moves incomplete animals, [434a] those whose only perception is touch: whether they can have imagination or not, and appetite. For they evidently have pain and pleasure in them, and if they have these, they must have appetite too. But how could imagination be in them? Perhaps, just as they move indeterminately, so these things are in them, but indeterminately. Perceptual imagination, then, as has been said, is found in the other animals too, but deliberative imagination only in those capable of reasoning. For whether to do this or that is already a task for reasoning; and one must measure by a single standard, since one pursues the greater. So one is able to make one image out of several. And this is why the other animals are thought not to have belief: they lack the belief that comes from inference, while this involves that. That is why desire does not have the deliberative element. Sometimes desire overcomes and moves wish; at other times the one moves the other, like a ball, desire moving desire, when lack of self-control occurs. But by nature the higher is always more authoritative and produces motion, so that three motions are already at work.

The knowing part is not moved but stays at rest. One belief or statement is universal and the other is about the particular: the one says that such a person ought to do such a thing, the other that this here is such a thing, and I am such a person. It is this latter belief that produces motion, not the universal one. Or both do, but the one does so more as something at rest, and the other not.

WHY ANIMALS NEED PERCEPTION

Aristotle explains why every living thing needs nutrition and why animals that move need perception.

Everything that lives and has soul, then, must have the nutritive soul, from its coming into being until its perishing. For what has come into being must have growth, a prime and a decline, and these are impossible without nourishment; so the nutritive capacity must be present in everything that grows and declines. But perception need not be present in all living things. For things whose body is simple cannot have touch, and without touch nothing can be an animal; nor can things that are not able to receive forms without their matter. But an animal must have perception, if nature does nothing in vain. For all natural things exist for the sake of something, or else will be incidental accompaniments of things that exist for the sake of something. For if a body capable of travelling had no perception, it would perish and would not [434b] reach its end, which is the function of nature. For how would it be nourished? Stationary things have at hand the source from which they grew. But a body that is not stationary, and has come into being, cannot have a soul and an intellect capable of discerning and yet lack perception. Nor can one that has not come into being: for why would it be so? It would have to be better either for the soul or for the body; but as things are, it is neither. The soul will not think any better, and the body will be no better off because of it. So no body that is not stationary has a soul without perception. Again, if it has perception, its body must be either simple or mixed. It cannot be simple, for

then it would not have touch, and it must have this. This is clear from the following. An animal is a body with soul, and every body is tangible, and what is tangible is what can be perceived by touch; so the animal's body too must be capable of touch, if the animal is to survive. For the other senses, such as smell, sight and hearing, perceive through other things; but if, when it touches things, it has no perception, it will be unable to avoid some and take others. And in that case the animal cannot survive. That is why taste too is a kind of touch: it is of food, and food is tangible body. Sound, color and smell do not nourish, nor do they produce growth or decline. So taste too must be a kind of touch, because it is the perception of what is tangible and nourishing. These senses, then, are necessary for the animal, and it is clear that there can be no animal without touch. The other senses exist for the sake of living well, and not in just any kind of animal but in certain ones; for instance, they must belong to one capable of travelling. For if it is to survive, it must perceive not only by touching but also at a distance. And this would happen if it were capable of perceiving through a medium, the medium being affected and moved by the object of perception, and the animal by the medium. For just as what produces motion from place to place makes something change up to a certain point, and what pushes makes something else push, so that the motion passes through something intermediate (the first mover pushes without being pushed, the last is only pushed without pushing, and the intermediate does both, [435a] and there are many intermediates), so it is with alteration, except that the thing alters something while it remains in the same place. For instance, if one pressed something into wax, the wax would be moved as far as one pressed; a stone is not moved at all, but water is moved far off. And air is moved, acts and is affected to the greatest extent, provided it stays put and is a single body. That is why, concerning reflection, it is better to say not that sight goes out and bounces back, but that the air is affected by the shape and color, as long as it is a single body. Over a smooth surface it is a single body, and so it in turn moves the sight, just

as if the imprint in the wax were passed right through to the far side.

TOUCH AND THE ANIMAL BODY

Aristotle argues that an animal's body cannot be simple and that an animal dies without touch.

It is clear that an animal's body cannot be simple, by which I mean made, for instance, of fire or of air. For without touch it cannot have any other sense, since every body with soul is capable of touch, as has been said. The other elements, apart from earth, could become sense organs; but they all produce perception by perceiving through something else, that is, through media. Touch, however, consists in touching the things themselves, which is why it has this name. And yet the other sense organs too perceive by touch, but through something else; touch alone seems to perceive through itself. So an animal's body could not be made of any of these elements. Nor, indeed, of earth. For touch is a kind of mean between all tangible qualities, and its organ can receive not only all the distinctive qualities of earth but also hot and cold and all the other tangible qualities. That is why we do not perceive with our bones and hair and parts like these: they are made of earth. 435b And that is why plants have no perception at all: they are made of earth. But without touch no other sense can be present, and this organ is made neither of earth nor of any other single element. It is evident, then, that animals must die when deprived of this one sense. For nothing that is not an animal can have it, and nothing that is an animal need have any other sense besides it. That is also why the other objects of perception, such as color, sound and smell, do not destroy the animal by their excess, but only the sense organs, unless incidentally: for instance, if a push or a blow comes along with the sound, or if sights and smells set other things in motion which destroy by touch. Flavor too destroys insofar as it happens also to be tangible. But excess in tangible qualities, such as hot, cold and hard, kills the animal. For

excess in any object of perception destroys the sense organ, so the tangible destroys touch too; and it is by touch that life is defined, since it has been shown that without touch there cannot be an animal. That is why excess in tangible qualities destroys not only the sense organ but the animal as well, because this is the one sense it must have. The other senses the animal has, as has been said, not for the sake of being but for the sake of being well. It has sight, for example, so that it may see, since it lives in air or water, or in general in something transparent; taste, because of the pleasant and the painful, so that it may perceive these in its food, and have appetite, and be moved; hearing, so that something may be signaled to it; and a tongue, so that it may signal something to another.