Timaeus

PLATO

c. 428–348 BC

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Τίμαιος

Translated from the Greek with AI (Claude) and edited



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Timaeus · Plato (c. 428–348 BC)

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INTRODUCTION

The day after describing an ideal city, Socrates asks his hosts to show that city in action. Critias responds with a story he says Solon brought back from Egypt: nine thousand years ago Athens defeated the island empire of Atlantis, before Atlantis sank into the sea in a single day and night.

The rest is a long speech by Timaeus, an astronomer from Italy, on how the world came to be. A good craftsman god, looking to an eternal model, shapes the cosmos out of disorder as a single living creature with a soul. Timaeus goes on to time and the heavens, the lesser gods, the four elements built out of triangles, the "receptacle" in which all becoming happens, and finally the human body, its diseases and its care.

Timaeus calls his account only a "likely story." It was the most widely read of Plato's works for over a thousand years, and it shaped ancient and medieval ideas of the cosmos.

Timaeus

Athens, the day after Socrates described his ideal city. Critias tells the story of ancient Athens and Atlantis, then Timaeus explains how the god made the world, the soul and the human body.

SOCRATES [17a] One, two, three—but where, my dear Timaeus, is our fourth? Yesterday he was one of my guests; today he was to be one of my hosts.

TIMAEUS Some illness has come over him, Socrates. He wouldn't willingly have missed this gathering.

SOCRATES Then isn't it up to you and these others to fill in the absent man's part as well?

TIMAEUS [17b] Certainly, and as far as we're able we won't fall short at all. After you entertained us yesterday with all the hospitality that was fitting, it wouldn't be right for those of us who are left not to be eager to entertain you in return.

SOCRATES Well then, do you remember how much I set you to speak about, and on what subjects?

TIMAEUS Some of it we remember; what we don't, you're here to remind us of. Better still, if it's no trouble for you, go back over it briefly from the beginning, so that it's more firmly fixed in our minds.

RECAP OF THE IDEAL CITY

Socrates sums up yesterday's account of the best city: its classes, guardians, women, marriages and children.

SOCRATES 17c So be it. Yesterday, I think, the main point of what I said concerned a constitution: what sort of constitution, and made up of what sort of men, would seem to me likely to prove the best.[1]

TIMAEUS And the way you described it, Socrates, was very much to the liking of us all.

SOCRATES Didn't we begin by separating off within it the class of farmers, and all the other crafts, from the class of those who were to fight on its behalf?

TIMAEUS Yes.

SOCRATES And after giving each person, in accordance with his nature, the one pursuit 17d suited to him—a single craft for each—we said that those whose job it was to fight on behalf of everyone must be guardians of the city and nothing else, whether someone came from outside or from within to do it harm. They would judge gently those 18a under their rule, who are their friends by nature, but be harsh in battle toward any enemies they met.

TIMAEUS Absolutely.

SOCRATES Yes, because we said, I think, that the guardians must have a nature of soul that is at once spirited and exceptionally philosophical, so that they could rightly be gentle toward the one group and harsh toward the other.

TIMAEUS Yes.

SOCRATES And their upbringing? Didn't we say they were to be raised in gymnastics and music, and in all the studies that go with these?

1 Socrates' summary recalls the ideal city described in Plato's *Republic*.

TIMAEUS [18b] Certainly.

SOCRATES And those raised in this way, it was said, I believe, must never regard gold or silver or any other possession whatever as their own private property. Instead, as auxiliaries, they would receive from those they protect a wage for their guarding, as much as is moderate for people of self-control, and spend it in common, living together with one another, attending to excellence at all times and free from all other pursuits.

TIMAEUS That too was said, just that way.

SOCRATES [18c] And we also mentioned women: that their natures should be tuned to be close to those of the men, and that all pursuits, both in war and in the rest of life, should be given to all of them in common.

TIMAEUS That too was said that way.

SOCRATES And what about producing children? Or is that easy to remember because what we said was so unusual? We made marriages and children common to all, contriving that no one would ever know his own offspring privately, [18d] but everyone would regard everyone as kin: as sisters and brothers all who fell within the appropriate age range; those earlier and above them as parents and parents' forebears; and those below as children and children's children.

TIMAEUS Yes, that too is easy to remember, as you say.

SOCRATES And so that they might, as far as possible, be born with the best natures from the start, don't we remember saying that the rulers, men and women, must in arranging the unions of marriage secretly [18e] contrive, by some sort of lottery, that the bad and the good would each be paired with women like themselves? That way no enmity would arise among them on this account, since they would think chance was the cause of the pairing.

TIMAEUS We remember.

SOCRATES [19a] And also that we said the children of the good were to be raised, while those of the bad were to be secretly dis-

tributed through the rest of the city; and that as they grew up, the rulers must keep watching them, bring back up those who deserved it, and move those among themselves who didn't deserve it into the place of those coming up?

TIMAEUS Just so.

SOCRATES Well then, have we now gone back over it as we did yesterday, so far as a summary goes? Or do we still miss anything that was said, my dear Timaeus, as having been left out?

TIMAEUS [19b] Not at all. That's exactly what was said, Socrates.

SOCRATES Then you may hear next how I've come to feel about the constitution we described. My feeling is something like this. Suppose someone saw beautiful animals somewhere, whether made by painting or truly alive but at rest, and came to long to see them moving and engaged in some contest that seemed [19c] suited to their bodies. That is how I feel about the city we described. I'd gladly hear someone describe in words the contests a city undertakes, as it competes against other cities: going to war in a fitting manner, and in the fighting showing qualities worthy of its education and upbringing, both in its actions in the field and in its negotiations in words with each of the other cities. Now on this, Critias and Hermocrates, [19d] I have passed judgment on myself: I could never praise these men and this city adequately. In my case that's nothing surprising. But I've formed the same opinion about the poets too, both those of long ago and those of today. It isn't that I disparage the tribe of poets; but it's clear to everyone that the imitative tribe will imitate most easily and best whatever it was brought up among, while what lies outside each one's upbringing [19e] is hard to imitate well in deeds, and harder still in words.[2] The class of sophists, for their part, I've considered very experienced in many speeches and many other fine things. But I'm afraid that, since they wander from city to city and have never settled homes of their own anywhere, they may miss the mark about philosophers and

2 Critias: an Athenian aristocrat related to Plato; whether he is the later oligarch or that man's grandfather is debated.

statesmen—about what such men would do and say in war and in battle, dealing with each party in deed and in word. That leaves the class of people like you, [20a] who share in both by nature and by upbringing. Timaeus here comes from Locri in Italy, a city with the best of laws; he's second to no one there in wealth and birth, he has held the highest offices and honors in his city, and in my opinion he has reached the very peak of all philosophy. As for Critias, all of us here know he's no amateur in any of the things we're discussing. And that Hermocrates' nature and upbringing are adequate for all of this, we have many witnesses, [20b] and must believe it. That's why, yesterday, when you asked me to go through the subject of the constitution, I had this in mind and gladly obliged, knowing that, if you were willing, no one could deliver the next speech more adequately than you—for once you had set the city in a fitting war, you alone of people today could give it everything that belongs to it. So after saying what I'd been asked, I set you in turn the task I'm now describing. You agreed, after considering it together among [20c] yourselves, to repay me today with a feast of speeches in return. And so here I am, dressed for the occasion, and readier than anyone to receive it.[3]

HERMOCRATES Yes indeed, Socrates, as Timaeus here said, we won't fall short in eagerness, and we have no excuse for not doing it. In fact, yesterday, as soon as we left here and arrived at Critias's guest quarters, where we're staying, and even before that on the way, we were thinking about exactly this. [20d] Critias here told us a story from an old tradition. Tell it now to Socrates too, Critias, so he can help us judge whether it suits the task or not.

CRITIAS That's what we must do, if our third partner, Timaeus, agrees too.

TIMAEUS I certainly do.

3 Hermocrates: the Syracusan general who led the defense against Athens' expedition to Sicily (415–413 BC).

CRITIAS: THE STORY OF ATLANTIS

Critias recounts how Solon learned from an Egyptian priest of ancient Athens' victory over Atlantis.

CRITIAS Listen then, Socrates, to a story that is very strange but entirely true, as Solon, the wisest of the Seven, [20e] once said. He was a relative and close friend of our great-grandfather Dropides, as he says himself in many places in his poetry. He told our grandfather Critias—as the old man in turn recalled to us—that this city had achieved great and wonderful deeds long ago, which had been lost from sight through time and the destruction of human beings. The greatest of them all was one [21a] that it would now be fitting for us to recall, both to repay you a favor and at the same time to praise the goddess at her festival, justly and truly, as though singing a hymn to her.[4]

SOCRATES Well said. But what was this deed that Critias described, following Solon's report—not just a story people tell, but one this city actually performed long ago?

CRITIAS I'll tell you—an old story I heard from a man who was far from young. At the time Critias was, as he said, already close to [21b] ninety years old, and I was about ten at most. It happened to be Koureotis, the day of the Apaturia. The festival's usual custom for boys took place then too: our fathers set us prizes for recitation. Many poems by many poets were recited, and since Solon's were new at that time, many of us boys sang them. One of the members of our phratry—whether because he really thought so then, or to do Critias a favor—said that in his opinion Solon had been the wisest of men in [21c] other respects, and in his poetry too the most noble of all the poets.[5] The old man—I remember it very well—was very pleased, and said with a broad smile, "Yes, Amynander, if only he hadn't treated poetry as a

4 Solon: Athenian statesman and poet of the early sixth century BC, counted among the Seven Sages. The goddess is Athena, whose festival is under way.
5 The Apaturia was an Athenian festival at which children were enrolled in their phratry, a hereditary brotherhood of families; Koureotis was its third day.

sideline but had taken it seriously like others, and had finished the story he brought here from Egypt, instead of being forced to neglect 21d it because of the civil strife and the other troubles he found when he came back—in my opinion neither Hesiod nor Homer nor any other poet would ever have become more famous than he." "And what was the story, Critias?" said Amynander. "It was about the greatest of deeds," he said, "one that would most justly be the most renowned of all. This city actually did it, but because of time and the destruction of those who did it, the story hasn't lasted down to us." "Tell it from the beginning," said the other: "what Solon told, and how, and from whom he heard it as the truth." 21e

"In Egypt," he said, "in the Delta, where the stream of the Nile divides at its apex, there is a district called the Saitic nome. The largest city of this district is Sais—the city King Amasis came from. Its people hold that the founder of their city is a goddess whose name in Egyptian is Neith, and in Greek, according to their account, Athena. They are great friends of Athens and claim to be related in some way to our people. Solon said that when he traveled there he was held in high honor by them, 22a and that once, when he questioned the priests most expert in such matters about ancient times, he discovered that neither he nor any other Greek knew anything, practically speaking, about them.[6] "Once, wanting to draw them into talk about antiquity, he set about telling them the most ancient things known here: about Phoroneus, who is said to have been the first man, and Niobe; and after the flood, he told the story of how Deucalion 22b and Pyrrha survived, traced the genealogy of their descendants, and tried to calculate the dates by recalling how many years had passed since the events he spoke of. And one of the priests, a very old man, said, 'Solon, Solon, you Greeks are always children. There's no such thing as an old Greek.' Hearing this, Solon asked, 'What do you mean by that?' 'You are all young,' the priest said, 'in your souls. You have in them no ancient belief handed

6 A nome was an administrative district of Egypt. Amasis ruled Egypt c. 570–526 BC.

down by old tradition, and no learning gray with age. The 22c reason for this is as follows.[7] "'There have been, and will be, many destructions of human beings in many ways—the greatest by fire and water, and lesser ones by countless other means. Take the story told among you too: that Phaethon, child of the Sun, once yoked his father's chariot, and because he couldn't drive it along his father's path, burned up everything on earth and was himself destroyed by a thunderbolt. It is told in the form of a myth, but the 22d truth of it is a deviation of the bodies that travel in the heavens around the earth, and a destruction, at long intervals, of what is on earth by a great fire. At such times those who live in the mountains and in high and dry places perish more than those who live near rivers and the sea. For us, the Nile, which is our savior in other ways as well, saves us then too from this predicament by being set loose. "'When, on the other hand, the gods purge the earth with water and flood it, those in the mountains—herdsmen and shepherds—are saved, while those in 22e your cities are swept by the rivers into the sea. But in this country, neither then nor at other times does water flow down onto the fields from above; on the contrary, it all naturally rises up from below. That is how, and for these reasons, what is preserved here is said to be the most ancient. But the truth is that in every place where extreme cold or heat doesn't prevent it, there is always a race of human beings, sometimes larger, 23a sometimes smaller. "'And whatever has happened, whether among you or here or in any other place we know of by report—if anything fine or great or otherwise remarkable has occurred—all of it has been written down here in our temples from ancient times and preserved. With you and others, by contrast, things have each time only just been furnished with writing and everything else that cities need, when again, after the usual number of years, the flood from heaven comes sweeping down on you like a disease and leaves only the unlettered 23b and uncultured among you. So you become young again, starting

7 Phoroneus, Niobe, Deucalion and Pyrrha: figures of Greek legend; Deucalion and his wife Pyrrha survived the great flood.

from the beginning, knowing nothing of what happened in ancient times, either here or among yourselves. "'Certainly the genealogies of your people that you just went through, Solon, are little different from children's tales. First, you remember only one flood on earth, though there were many before it. Further, you don't know that the finest and best race of human beings arose in your country, from whom you and your whole [23c] city today are descended, from a small remnant of seed that was once left. You're unaware of it because for many generations the survivors died without leaving any voice in writing. "'For there was once, Solon, before the greatest destruction by water, a city that is now Athens, which was the best in war and exceptionally well governed in every respect. Its deeds and its constitution are said to have been the finest of all those under [23d] heaven that report has brought to us.' Solon said that when he heard this he was amazed, and with all eagerness begged the priests to go through everything about those citizens of old for him, precisely and in order. The priest said, 'I don't begrudge it, Solon. I'll tell you, for your sake and your city's, and above all for the sake of the goddess, who received as her lot both your city and this one, and nurtured and educated them—yours the earlier [23e] by a thousand years, when she took your seed from Earth and Hephaestus, and this one later.[8] "'The age of our institutions here is recorded in our sacred writings as eight thousand years. So I'll briefly show you the laws of your citizens who lived nine thousand years ago, and the finest deed they accomplished. The precise details [24a] of everything, in order, we'll go through another time at leisure, taking up the writings themselves. Compare their laws with those here: you'll find here now many examples of what existed among you then. First, the class of priests, set apart from the others; next, the class of craftsmen, each kind working by itself without mixing with any other; and the classes of herdsmen, of hunters, and [24b] of farmers. "'And the warrior class, you've surely noticed, is separated here from all the other

8 In Athenian legend the early Athenians were born from Earth after Hephaestus' seed fell upon her.

classes; the law assigns them no concern but war. Then there is the style of their armament, with shields and spears—we were the first in Asia to arm ourselves with these, as the goddess showed us, just as she showed you first in your part of the world. And as for understanding, you surely see how much care the law here gave from the very beginning to the 24c cosmos: from these divine matters it discovered everything that applies to human affairs, down to divination and medicine for health, and acquired all the other studies that follow from these. "'This whole arrangement and order, then, the goddess set up first for you when she founded your city. She chose the place where you were born, seeing in it the well-tempered blend of the seasons, which would produce men of the greatest understanding. Since the goddess is a lover of war 24d and a lover of wisdom, she chose the place that would bear the men most like herself, and settled that first. So you lived there, using such laws, and even better governed, surpassing all human beings in every excellence, as was to be expected of the offspring and pupils of gods. Many great deeds of your city are recorded here and admired, but one 24e surpasses them all in greatness and excellence. The records tell how great a power your city once stopped, as it marched insolently against the whole of Europe and Asia together, launched from outside, from the Atlantic sea. "'In those days that sea could be crossed. There was an island in front of the mouth that you call, as you say, the Pillars of Heracles, and the island was larger than Libya and Asia put together. From it, travelers of that time could cross to the other islands, and from the islands 25a to the whole opposite continent that surrounds that true sea. For all that lies within the mouth we speak of is evidently a harbor with a narrow entrance; but that other is really a sea, and the land surrounding it may most rightly be called, in the full and true sense, a continent.[9] "'On this island of Atlantis a great and marvelous power of kings arose, which ruled the whole island and many other islands and parts of the continent.

9 The Pillars of Heracles are the Strait of Gibraltar; "Libya" is the Greek name for Africa.

Besides these, of the lands here within the strait, they ruled 25b
Libya as far as Egypt, and Europe as far as Tyrrhenia. This whole power, gathered into one, once tried in a single onslaught to enslave your region and ours and the whole territory within the mouth.[10] "'It was then, Solon, that the power of your city became manifest to all humankind in excellence and strength. Pre-eminent over all in courage and in the arts of war, 25c sometimes leading the Greeks, sometimes standing alone by necessity when the others deserted, it went to the uttermost dangers, overcame the invaders, and set up a trophy. It prevented those not yet enslaved from being enslaved, and all the rest of us who live within the bounds of Heracles it freed without stint. But later, when there were extraordinary earthquakes and floods, in a single 25d terrible day and night your whole body of warriors sank all together into the earth, and the island of Atlantis likewise sank into the sea and vanished. That is why the sea there is even now impassable and unexplorable: it is blocked by very shallow mud, which the island left as it settled.'"

There you have it, Socrates, in brief: what the elder 25e Critias said, according to Solon's report. When you were speaking yesterday about the constitution and the men you described, I was amazed as I recalled the very things I'm telling you now, noticing how, by some divine chance, you agreed on most points, not wide of the mark, with what Solon said. Yet I didn't 26a want to speak at once, since after so long I didn't remember well enough. So I thought I should first recover it all adequately for myself and then speak. That's why I was quick to agree yesterday to the task you set us, thinking that we would be reasonably well supplied with what is the greatest task in all such undertakings: to lay down a story that fits our purposes. So, as our friend here said, yesterday as soon as I left here I started telling it 26b to these men as I remembered it, and after I got home I recovered nearly all of it by thinking it over during the night. It's true what they say: what we learn as children has a remarkable hold on the memory. What I heard yesterday I don't know whether I

10 Tyrrhenia: Etruria, in central Italy.

could recall in full; but this, which I heard such a very long time ago, I'd be completely amazed if any of it had escaped me. I listened to it then with great pleasure and [26c] childish delight, and the old man taught me eagerly, since I kept asking him questions, so that it has stayed fixed in me like the burned-in colors of an indelible painting. And first thing this morning I told these men this same story, so that they'd be well supplied with material for speeches along with me. Now then, Socrates—and this is the reason for all I've said—I'm ready to tell the story, not just in summary but in detail, as I heard it. The citizens and the city you described to us yesterday as though in a myth we'll now transfer [26d] to reality and set down here, taking that city to be this one; and the citizens you imagined we'll say are those real ancestors of ours whom the priest spoke of. They'll fit perfectly, and we won't be out of tune in saying that they are the people who lived at that time. Dividing the task among us all, we'll try, as far as we can, to render fittingly what you asked of us. So we need to consider, Socrates, whether this story suits us, [26e] or whether we should look for some other instead.

SOCRATES And what story, Critias, could we take up in preference to this one? It would suit the present sacrifice to the goddess best, because of its kinship with her, and it counts for a great deal that it's not an invented tale but a true account. How and where will we find others if we let these go? We can't. No—with good fortune, you must speak, and I, in return for my speeches yesterday, must now [27a] keep quiet and listen in turn.

CRITIAS Then look, Socrates, at how we've arranged our hospitality for you. We decided that Timaeus, since he is the best astronomer among us and has made it his special business to know about the nature of the universe, should speak first, beginning from the origin of the cosmos and ending with the nature of human beings. After him I would speak: taking over from him human beings brought into being by his account, and from you some of them exceptionally well educated, [27b] I would, following Solon's account and law, bring them before us as before judges and make them citizens of this city, as being the Athenians of

that time, whose disappearance the report of the sacred writings revealed; and from then on I would speak of them as citizens and Athenians.

SOCRATES It looks as though my feast of speeches will be repaid completely and splendidly. So the next task, it seems, would be yours, Timaeus—once you've called on the gods, as custom requires.

BEING AND BECOMING

Timaeus prays, distinguishes what always is from what becomes, and says his account can only be likely.

TIMAEUS [27c] Well, Socrates, everyone with even a little good sense always calls on a god at the outset of any undertaking, small or great. And we, who are about to give some account of the universe—how it came to be, or whether it is without coming to be—unless we've gone completely astray, must invoke gods and goddesses and pray that everything we say will be pleasing above all to them, and consequently [27d] to ourselves. Let that be our invocation of the gods. As for ourselves, we must call on ourselves to proceed in whatever way you will most easily understand and I will best explain what I think about the matters before us.

In my opinion, then, we must first draw this distinction: what is it that always is and has no becoming, and what is it that is always becoming [28a] but never is? The one is grasped by thought with the aid of reasoning, since it is always the same; the other is the object of opinion with the aid of unreasoning perception, coming to be and passing away, but never really being. Again, everything that comes to be must come to be through some cause, for it is impossible for anything to come into being without a cause. Whenever, then, the craftsman looks to what is always the same, and uses a model of that kind in producing the form and power of his work, all that he completes in this way is necessarily [28b] beautiful; but whenever he looks to what has come to be, using a model that has itself been generated, it is not

beautiful.[11] Now as to the whole heaven—or cosmos, or whatever other name it would most gladly accept; let us call it that—we must first ask about it the question that is laid down as the one to ask first about anything: did it always exist, with no beginning of becoming, or has it come to be, starting from some beginning? It has come to be. For it is visible and tangible and has a body, and all such things are perceptible; and [28c] perceptible things, grasped by opinion with the aid of perception, have been shown to be things that come to be and are generated. And what has come to be, we say, must necessarily have come to be through some cause. To find the maker and father of this universe is hard work, and having found him, it is impossible to declare him to everyone. But this, at any rate, we must consider about the cosmos again: which of the two models did its builder look to in [29a] making it—the one that stays the same and unchanging, or the one that has come to be? If this cosmos is beautiful and its craftsman good, clearly he looked to the eternal model; but if what it isn't even permitted for anyone to say is true, then to the one that has come to be. It is clear to everyone that he looked to the eternal one: the cosmos is the most beautiful of things that have come to be, and he is the best of causes. Having come to be in this way, then, it has been crafted after what is grasped by reason and understanding and stays the same. [29b] And given this, it is entirely necessary that this cosmos be an image of something. Now in every matter it is most important to begin at the natural beginning. So concerning an image and its model we must make this distinction: accounts are akin to the very things of which they are the interpreters. Accounts of what is abiding and firm and clearly seen by intelligence are themselves abiding and unshakeable—insofar as it is possible and fitting for accounts to be irrefutable and invincible, they must [29c] fall short of this in nothing. But accounts of what has been made in the likeness of that model, and is an image, are likely, and stand in proportion to those others: as being is to becoming, so truth is to belief. So if, Socrates, on many points concerning

11 "Craftsman" translates *dēmiourgos*, the source of the English word "demiurge."

many things—the gods and the coming into being of the universe—we prove unable to give accounts that are in every way and in every respect consistent with themselves and exact, don't be surprised. If we can offer accounts no less likely than anyone's, we must be content, remembering that I who speak [29d] and you who judge have only human nature, so that on these matters it is fitting for us to accept the likely story and look for nothing beyond it.

SOCRATES Excellent, Timaeus; we must accept it entirely as you tell us. We've received your prelude with wonder; now go on and complete the main strain for us.

THE CRAFTSMAN AND THE MODEL

The good craftsman makes one cosmos, a living being with a spherical body bound by proportion.

TIMAEUS Let us say, then, for what reason the one who put it together put together becoming and this [29e] universe. He was good, and in one who is good no envy about anything ever arises. Being free of it, he wanted everything to become as much like himself as possible. Whoever accepts this as the most sovereign principle of becoming and of the cosmos, [30a] on the word of men of understanding, would be entirely right to accept it. For the god wanted everything to be good and nothing bad, as far as possible. And so, taking over all that was visible—which was not at rest but moving discordantly and without order—he brought it from disorder into order, judging that order was in every way better than disorder. It was not and is not permitted for the best to do anything but what is most beautiful. [30b] So, on reflection, he found that among things visible by nature, no work without intelligence would ever be more beautiful, taken as a whole, than one with intelligence taken as a whole, and that intelligence cannot come to be in anything apart from soul. Because of this reasoning, he put intelligence in soul and soul in body as he constructed the universe, so that the work he completed would be by nature the most beautiful and the best. So then, according

to the likely account, we must say that this cosmos truly came to be a living being endowed with soul and intelligence through the god's [30c] providence.

Given this, we must next say what follows: in the likeness of which living thing did its constructor construct it? Let us not deem it worthy of any of those that are of the nature of a part—for nothing resembling something incomplete could ever be beautiful. Rather, let us suppose that it is most like that of which the other living things, individually and by kinds, are parts. For that model embraces and contains within itself all the intelligible living things, just as this [30d] cosmos contains us and all the other visible creatures. For the god, wanting to make it as like as possible to the most beautiful of intelligible things, complete in every respect, constructed a single visible living being, containing within itself all the living things [31a] that are by nature akin to it. Have we been right, then, to speak of one heaven, or would it have been more correct to speak of many, even infinitely many? One—if it is to have been crafted according to its model. For what embraces all intelligible living things could never be one of two, alongside another. Otherwise there would have to be yet another living thing surrounding those two, of which they would be parts, and it would then be more correct to say that this cosmos was made in the likeness not of those two but of the one that contains them. So, [31b] in order that this cosmos might be like the complete living being in being unique, the maker made neither two cosmoses nor infinitely many: this heaven has come to be one and unique of its kind, and so it is and will continue to be.

Now what has come to be must be bodily, visible and tangible. But nothing could ever become visible without fire, or tangible without something solid, and nothing is solid without earth. That is why the god, when he began to put together the body of the universe, made it out of fire and earth. But two things alone cannot be well joined without a third; [31c] there must be some bond between them to bring them together. The finest bond is the one that makes itself and the things it binds as fully

one as possible, and it is proportion that by nature accomplishes this most beautifully. For take any three numbers, whether solids [32a] or squares: whenever the middle one is such that what the first is to it, it is to the last, and conversely, what the last is to the middle, the middle is to the first—then, since the middle becomes first and last, and the last and first both become middles, it will necessarily follow that all of them are the same; and being the same as one another, all will be one. Now if the body of the universe had had to come to be a plane surface with no depth, one mean would have been enough [32b] to bind together both the terms with it and itself. But as it is, it was fitting for it to be solid, and solids are never joined by one mean, but always by two. So the god set water and air between fire and earth, and made them as far as possible proportional to one another—as fire is to air, so air is to water, and as air is to water, so water is to earth—and so he bound together and constructed a heaven visible and tangible. For these reasons, and from these components, of such a kind [32c] and four in number, the body of the cosmos was generated, brought into agreement through proportion. From these it gained friendship, so that, having come together into unity with itself, it became indissoluble by anything except the one who bound it.

The construction of the cosmos took up the whole of each of the four. Its constructor built it from all the fire, water, air and earth there was, leaving no part or power of any of them outside. His intentions were these: [32d] first, that it should be as fully as possible a whole and complete living being, made of complete [33a] parts; next, that it should be one, since nothing would be left over from which another such thing could come to be; and further, that it should be ageless and free of disease. For he realized that when hot and cold and all things with strong powers surround a composite body from outside and assail it at the wrong time, they dissolve it, and by bringing on diseases and old age make it waste away. For this reason and by this reasoning he fashioned it as a single whole made of all wholes, complete, ageless and free of disease. [33b] He gave it the shape that

was fitting and akin to it. For the living being that was to contain all living beings within itself, the fitting shape would be the one that contains within itself all shapes. So he rounded it off, as if on a lathe, into a sphere, equidistant from the center to the extremities in every direction—the most complete of all shapes and the most like itself—judging like to be ten thousand times more beautiful than unlike. He finished its whole exterior [33c] perfectly smooth all round, for many reasons. It had no need of eyes, since nothing visible was left outside it; nor of hearing, since nothing audible was left either. There was no surrounding air that needed to be breathed; nor did it need any organ by which to take in food and later send out again what had been drained of its nourishment. Nothing went out of it, and nothing came into it from anywhere—there was nothing—for it was designed by art to provide its own waste as its own food, and to act and be acted on entirely within itself and by [33d] itself. Its builder thought it would be better self-sufficient than in need of other things. Nor did he think he should attach hands to it uselessly, since it had no need to grasp anything or fend anyone off; nor feet, nor any apparatus for walking at all. [34a] For he assigned it the motion proper to its body, the one of the seven that most belongs to intelligence and understanding. So he turned it round uniformly, in the same place and within itself, and made it move revolving in a circle; all the other six motions he took away from it, and made it free of their wanderings.[12] And since for this revolution it needed no feet, he made it without legs and without feet.

This, then, was the whole reasoning of the god who always is about the god who was one day [34b] to be. By this reasoning he made its body smooth and even, everywhere equidistant from the center, a whole and complete body made of complete bodies. He placed soul at its center, stretched it throughout the whole, and further wrapped the body round with it from outside. And so he established it as a heaven, a circle revolving in a

12 The seven motions are rotation in place and movement up, down, forward, backward, right and left.

circle, one and only and solitary, able because of its excellence to keep company with itself and needing no one else, sufficient to itself as acquaintance and friend. For all these reasons he brought it into being as a blessed god.

THE WORLD-SOUL

The god blends the Same, the Different and being into the soul and divides it by harmonic ratios.

TIMAEUS As for the soul, though we are now trying to speak of it after the body, [34c] the god did not devise it to be younger in that way—for when he joined them together he would not have let the elder be ruled by the younger. It is we who, sharing a great deal in the random and haphazard, also speak somewhat in this way. But he constructed soul prior to and older than body in birth and in excellence, to be its mistress and ruler, and body its subject; [35a] and he made it out of the following components and in the following way. Between the indivisible being that is always the same and the divisible being that comes to be in bodies, he blended a third form of being out of both. Likewise with the nature of the Same and that of the Different: he constructed a mixture of each between their indivisible part and their part that is divisible in bodies. Then, taking these three, he blended them all into a single form, forcing the nature of the Different, which was hard to mix, into union with the Same. [35b] Having mixed these with being, and made one out of three, he divided this whole again into as many portions as was fitting, each a mixture of the Same, the Different and being. He began the division as follows. First he took one portion from the whole; after this he took a portion double this; then a third, one and a half times the second and three times the first; a fourth, double the second; a fifth, three times the [35c] third; a sixth, eight times the first; and a seventh, twenty-seven times the first. After this he filled in [36a] the double and triple intervals, cutting off further portions from the mixture and placing them between these terms, so that in each interval there were two means: one

exceeding one extreme and exceeded by the other by the same fraction of the extremes, the other exceeding and exceeded by an equal number.[13] These links produced, within the earlier intervals, intervals of one and a half (3:2), one and a third (4:3) and one and an eighth (9:8). 36b He then filled up all the 4:3 intervals with the 9:8 interval, leaving a fraction of each; and this remaining fraction was an interval whose terms stand in the ratio of the number 256 to the number 243. And so the mixture from which he had been cutting these portions was now entirely used up. Then he split this whole structure lengthwise into two, laid the two strips across each other, middle to middle, like the letter chi (X), and bent them 36c into a single circle, joining each to itself and to the other at the point opposite where they had crossed. He enclosed them in the motion that revolves uniformly in the same place, and made one of the circles outer and the other inner.[14] The outer movement he declared to be that of the nature of the Same, and the inner that of the Different. The movement of the Same he made revolve to the right, along the side; that of the Different to the left, along the diagonal. And he gave supremacy to the revolution 36d of the Same and similar, for he left it single and undivided. But the inner one he split in six places into seven unequal circles, according to the double and triple intervals, three of each. He ordered the circles to move in directions opposite to one another: three of them at the same speed, the other four at speeds unlike one another's and unlike those of the three, but moving in ratio.[15]

When the whole construction of the soul had come about as its constructor intended, he next fashioned all that is bodily within 36e it, and brought the two together, center to center, and fitted them to each other. And the soul, woven through everything from the center to the outermost heaven and envel-

13 The seven portions are 1, 2, 3, 4, 9, 8, 27: a series of doubles (1, 2, 4, 8) and one of triples (1, 3, 9, 27). The two means are the harmonic and the arithmetic.
14 In musical terms 3:2 is a fifth, 4:3 a fourth and 9:8 a whole tone; 256:243 is the interval left over, a little smaller than a semitone.
15 The circle of the Same carries the daily rotation of the fixed stars; the seven circles of the Different will carry the sun, moon and five planets.

oping it all round from outside, revolving within itself, began a divine beginning of unceasing, intelligent life for all time. The body of heaven has come to be visible; but the soul is invisible, and shares in reasoning and [37a] harmony, the best of things generated, generated by the best of intelligible and eternal things. Because it was blended from the nature of the Same and the Different and from being—these three portions—and divided and bound together in proportion, and because it revolves back upon itself, whenever it touches something that has scattered being, or something whose being is indivisible, it is moved throughout its whole self and declares what that thing is the same as and what it is [37b] different from; and in what relation, where, how and when it happens that each thing is and is affected in relation to each other thing, both among the things that come to be and in relation to the things that stay always the same. Now its account, which is equally true whether it concerns the Different or the Same, is carried along without sound or voice within the self-moving soul. When it concerns what is perceptible, and the circle of the Different, running straight, reports it throughout the whole soul, opinions and beliefs arise that are firm and true. [37c] But when it concerns what is rational, and the circle of the Same, running smoothly, reveals it, intelligence and knowledge are necessarily achieved. And if anyone ever calls that in which these two arise, among the things that are, anything other than soul, he will be saying anything but the truth.

TIME, THE MOVING IMAGE OF ETERNITY

Time is made together with the heaven, and the sun, moon and planets are set to measure it.

TIMAEUS When the father who had begotten it saw it moving and alive, a shrine come into being for the eternal gods, he was delighted, and in his joy he thought to make it still more like its model. [37d] So, just as the model is itself an eternal living being, he set about making this universe too as much like it as he

could. Now the nature of the living being was eternal, and this could not be fully conferred on something generated. So he thought to make a moving image of eternity; and at the same time as he ordered the heaven, he made of eternity, which remains in unity, an eternal image moving according to number —the very thing we have named time. [37e] For days and nights, months and years did not exist before the heaven came to be; he devised their coming into being at the same time as he constructed it. These are all parts of time, and "was" and "will be" are forms of time that have come to be—which we wrongly apply, without noticing, to eternal being. For we say that it was, is and will be; but according to a [38a] true account only "is" belongs to it, while "was" and "will be" are properly said of the becoming that proceeds in time—for those two are motions. But what is always the same and unmoving cannot become older or younger through time, nor ever have become so, nor be so now, nor be so in the future; nor, in general, does it have any of the attributes that becoming has attached to the things that move in the realm of perception. These have come to be as forms of time, which imitates eternity and circles according to number. And besides these, there are such expressions [38b] as that what has come to be *is* come to be, that what is coming to be *is* coming to be, that what will come to be *is* what will come to be, and that what is not *is* not—none of which we say precisely. But perhaps this is not the right moment to go into these matters in precise detail.

Time, at any rate, came into being together with heaven, so that, having been born together, they may also be dissolved together, if they are ever to be dissolved at all. And it came into being after the model of the eternal nature, so that it might be as like [38c] it as possible. For the model is something that is through all eternity, while heaven, for its part, has come to be, is, and will be, continuously through the whole of time. As a result of this reasoning and plan of the god for the birth of time, then, in order that time might be born, the sun and moon and five other stars, which go by the name of "wanderers," came into being to mark off and guard the numbers of time. When the god had

made a body for each of them, he placed them in the orbits along which the circuit of the Different was moving, seven bodies in [38d] seven orbits: the moon in the first, around the earth; the sun in the second, above the earth; and the Morning Star and the one called sacred to Hermes in circles that run at the same speed as the sun but have been allotted a power contrary to it. That is why the sun, the star of Hermes and the Morning Star overtake one another and are overtaken by one another in the same way.[16] As for the others, where he set them and for what reasons, if one went through them all the account, [38e] though a side issue, would make more work than the things it is being told for. Perhaps these matters may get the treatment they deserve later, at leisure. At any rate, when each of the bodies that were needed to help produce time had arrived in the motion suited to it, and their bodies, bound with living bonds, had been born as living beings and had learned their appointed task, they went round along the motion of the Different, [39a] which is slanted and passes through the motion of the Same and is mastered by it. Some moved in a larger circle, some in a smaller; those in the smaller circle went round faster, those in the larger more slowly. Because of the motion of the Same, the ones that go round fastest appeared to be overtaken by the slower ones, when in fact they were overtaking them. For as it twists all their circles into spirals, since they advance [39b] in two opposite directions at once, it makes the body that departs most slowly from it, the fastest of motions, appear closest to it. And so that there might be a clear measure of their relative slowness and speed, and for the course of the eight revolutions, the god kindled a light in the second orbit from the earth, the one we now call the sun. It was to shine as brightly as possible throughout the whole heaven, and let the living beings for whom it was fitting share in number, learning it from the uniform revolution [39c] of the Same. This, then, is how and why night and day came into being: the period of the one, most intelligent circling. A

16 The "wanderers" (*planētai*) are the planets; the Morning Star is Venus and the star of Hermes is Mercury.

month has passed when the moon, having gone round its own circle, overtakes the sun; a year, when the sun has gone round its own circle. As for the periods of the others, human beings, apart from a few out of many, have not noticed them. They neither name them nor study them with numbers to measure them against one another. So they are, [39d] so to speak, unaware that the wanderings of these bodies are time, wanderings bewildering in number and wonderfully intricate. Still, it is possible to see that the perfect number of time fulfills the perfect year at the moment when the relative speeds of all eight revolutions have finished together and come back to their starting point, as measured by the circle of the Same, which moves uniformly.[17] In this way, then, and for these reasons, all the stars that have turnings as they travel through heaven were born, so that this cosmos [39e] might be as like as possible to the perfect and intelligible living being, in imitation of its eternal nature.

THE GODS AND THE CRAFTSMAN'S SPEECH

The fixed stars, the earth and the traditional gods are born, and the craftsman charges the young gods.

TIMAEUS Everything else, up to the birth of time, had already been fashioned in the likeness of the thing it was modeled on. But in one respect it was still unlike: it did not yet contain within itself all the living beings that were to come into being. So he went on to complete this remaining part, stamping it after the nature of the model. Just as intelligence discerns the forms that are in the living being that truly is, what kinds and how many, so he thought that this world too must have forms of the same kinds and number. There are four: first, the heavenly race of gods; second, [40a] the winged kind that travels through the air; third, the kind that lives in water; and fourth, the kind that goes on foot and lives on dry land. The divine kind he made mostly out of fire, so that it would be as bright and as beautiful to see as

17 The "perfect year," later called the Great Year, is the period after which all the heavenly bodies return together to the same positions.

possible. Likening it to the universe, he made it well rounded. He set it in the understanding of the supreme revolution, to follow along with it, and distributed it in a circle all around the heaven, to be a true *kosmos*, an adornment embroidered over the whole of it. To each of them he gave two motions: one uniform, in the same place, since each always thinks the same thoughts [40b] about the same things; the other forward, since each is mastered by the revolution of the Same and uniform. In the other five motions he made each of them unmoving and still, so that each might be as good as possible.[18] This is how all the stars that do not wander came into being: living beings, divine and everlasting, that always remain, turning uniformly in the same place. The ones that turn back and wander in the way described came into being as was said earlier. The earth, our nurse, winding [40c] around the axis that stretches through the universe, he devised to be guardian and craftsman of night and day, the first and eldest of the gods that have come into being within heaven. As for the dances of these gods, and their movements alongside one another; the returnings and advancings of their circles; which of the gods come into line with one another at their conjunctions and how many stand opposite; which pass in front of which, and at what times each is hidden from us and then reappears, sending terrors and signs of [40d] things to come to those who cannot calculate: to describe all this without visual models of them would be wasted labor. Let this be enough for us on these matters, and let our account of the nature of the visible, generated gods come to an end.

To speak of the other divinities and to know their birth is beyond us. We must trust those who have spoken about it before. They were descendants of the gods, as they said, and surely knew their own ancestors well. It is impossible, then, to disbelieve the children [40e] of gods, even if they speak without likely or compelling proofs; since they claim to be reporting family matters, we must follow custom and believe them. So let the birth of

18 *Kosmos* in Greek means both "order" and "ornament," as well as the ordered world.

these gods be as they tell it, and let it be told as follows.[19] Ocean and Tethys were children of Earth and Heaven; theirs were Phorcys, Cronus, Rhea and all who 41a came with them; from Cronus and Rhea came Zeus and Hera and all those we know are called their brothers and sisters, and their further offspring besides. Now when all the gods had come into being, both those that circle in plain sight and those that appear only as far as they wish, the one who fathered this universe spoke to them as follows:

"Gods of gods, works of which I am craftsman and father: what has come into being through me cannot be undone, unless I will it. Everything 41b that has been bound can be unbound, of course; but only an evil one would wish to undo what is beautifully fitted together and in good condition. So, since you have come into being, you are not immortal, nor wholly indissoluble. Yet you will never be dissolved, nor meet the fate of death, since you have in my will a bond still greater and stronger than those you were bound with when you came into being. Now learn what I am telling you and showing you. Three mortal kinds are still left unborn. If they are not born, heaven will be incomplete, for it will not contain within 41c it all the kinds of living beings, and it must, if it is to be complete enough. "But if these were to come into being and share in life through me, they would be equal to gods. So, in order that they may be mortal and this universe may truly be a whole, turn yourselves, as your nature directs, to the crafting of living beings, imitating the power I used in bringing you into being. The part of them that is fit to share the name of the immortals, the part called divine that rules in those who are always willing to follow justice and you, I will sow and begin 41d and then hand over to you. The rest is for you: weave mortal onto immortal, fashion living beings and beget them, give them food and make them grow, and when they perish, receive them back again."

19 Poets such as Orpheus and Musaeus were said to be sons of gods and wrote genealogies of the gods.

HUMAN SOULS

Souls are sown into bodies, thrown into disorder by sensation, and restored by reason and education.

TIMAEUS So he spoke, and turning again to the mixing bowl in which he had blended and mixed the soul of the universe, he poured in what was left of the earlier ingredients and mixed them in much the same way, though no longer as pure as before, but second and third in purity. When he had put the whole together, he divided it into souls equal in number to the stars, [41e] and assigned each soul to a star. He mounted them as if in a chariot, showed them the nature of the universe, and told them the laws of destiny. The first birth would be one and the same, appointed for all, so that none would be disadvantaged by him. Once they had been sown, each into the instrument of time suited to it, they were to [42a] grow into the most god-fearing of living beings. And since human nature is twofold, the superior kind would be the one that would thereafter be called "man." When they had been implanted in bodies by necessity, and their bodies were gaining some parts and losing others, then first, arising from violent impressions, there would necessarily be one and the same innate capacity for sensation in all; second, love mixed with pleasure and pain; and besides these, fear and anger, and all the feelings that [42b] follow from them and all that are by nature their opposites. If they mastered these, they would live justly; if they were mastered by them, unjustly. Whoever lived well for his appointed time would go back to the dwelling of his kindred star and have a happy life, one suited to him. But whoever failed in this would change into a woman's nature at his [42c] second birth. And if even then he did not stop being wicked, he would keep changing, according to the way he had become wicked, into some beast's nature resembling the character he had formed. And he would have no rest from his toils in these changes until, drawing along with the revolution of the Same and uniform within him the great mass that had later

grown onto him from fire, water, air [42d] and earth, turbulent and irrational as it is, he mastered it by reason and returned to the form of his first and best condition. Having laid down all these laws for them, so that he would be blameless for the future wickedness of any of them, he sowed some into the earth, some into the moon, and some into the other instruments of time. After the sowing, he handed over to the young gods the task of molding mortal bodies; of fashioning whatever part of the human soul still had [42e] to be added, and everything that goes with it; and then of ruling, and steering the mortal living being as finely and as well as they could, except insofar as it became the cause of its own evils.

Having arranged all this, he remained in his own accustomed state. And while he remained, his children took note of their father's order and obeyed it. Taking the immortal principle of a mortal living being, and imitating their own craftsman, they borrowed portions of fire and earth, water and air from the cosmos, [43a] to be paid back again. They glued together what they took, not with the indissoluble bonds by which they themselves were held together, but by welding them with rivets that were dense and too small to see, making from all of them a single body for each creature. And they bound the revolutions of the immortal soul into this body, with its inflow and outflow. Bound into a mighty river, the revolutions neither mastered it nor were mastered, but were carried by force and carried it by force. So [43b] the living being as a whole moved, but advanced without order, at random, irrationally, with all six motions: it wandered forward and backward, right and left, down and up, in every direction along the six dimensions. Great as was the wave that flooded in and flowed out and supplied their nourishment, still greater turmoil was caused by the impressions of things that struck each creature: when [43c] someone's body chanced upon alien fire outside and collided with it, or with the solid hardness of earth or the liquid glidings of water, or was caught in a storm of winds carried by the air, and the motions from all these passed through the body and struck the soul. That is why these

motions were afterward called, and are still called today, "sensations" as a whole. And at that time especially, producing the most and greatest motion for the moment, together with the ever-flowing 43d stream they moved and violently shook the soul's revolutions. The revolution of the Same they shackled completely by flowing against it, and stopped it from ruling and going on its way. The revolution of the Different they shook through and through. So the three intervals of the double and the three of the triple, and the means and bonds of the ratios 3:2, 4:3 and 9:8, since they could not be wholly undone except by the one who had bound them, were twisted 43e in every kind of twist, and the circles were broken and deformed in every possible way. Barely holding together, they moved, but moved irrationally, now reversed, now sideways, now upside down. It is as when someone stands upside down, propping his head on the ground and holding his feet up against something: in this position, to him and to those watching, each sees the other's right as left and left as right. Suffering this and other such things violently, the revolutions, 44a whenever they meet something outside that belongs to the kind of the Same or of the Different, call a thing the same as something, or different from something, contrary to the truth. They have become false and foolish, and at such times none of the revolutions in them rules or leads. And when some sensations carried in from outside strike them and drag along with them the whole vessel of the soul, then the revolutions, though mastered, seem to be the masters. Because of all these experiences, then, the soul today, as in the beginning, is at first without intelligence 44b when it is bound into a mortal body. But when the stream of growth and nourishment flows in less strongly, and the revolutions, finding calm, go their own way again and settle down more as time goes on, then at last the revolutions are straightened toward the shape each of the circles has when it moves according to nature. They call the Different and the Same correctly, and make the one who has them intelligent. And if right nurture through education is added to this, 44c he becomes whole and fully healthy, having

escaped the gravest illness. But if he neglects it, he goes through a lame life and returns to Hades again incomplete and without intelligence.

THE HEAD, SIGHT AND HEARING

The gods build the head and body, and give sight and hearing for the sake of philosophy.

TIMAEUS But these things come later. We must go through the matters now before us more precisely. As for what comes before them, the birth of bodies, part by part, and of soul, and the causes and divine forethought by which they came into being, we must go through this [44d] holding on to what is most likely and proceeding on those lines.

The two divine revolutions the gods bound into a spherical body, imitating the shape of the universe, which is round. This is what we now call the head, the most divine part of us and master of everything in us. To it they handed over the whole body as well, which they assembled as its servant, realizing that it would share in all the motions there were to be. So that it would not roll about on the earth, which has heights and hollows of every kind, [44e] and be at a loss how to climb over some and get out of others, they gave it the body as a vehicle and a means of getting about. That is why the body acquired length and grew four limbs that could stretch and bend, the god contriving a means of travel. Gripping and pushing off with these, it became able to travel through every place, [45a] carrying on top of us the dwelling of our most divine and sacred part. That is how and why legs and hands were attached to all human beings. And since the gods considered the front more honorable and more fit to lead than the back, they gave us movement mostly in that direction. So a human being had to have the front of the body distinct and unlike the back. That is why, first, they set the face on that side of the head's vessel, and bound into it instruments [45b] for all the soul's forethought, and ordained that this, our natural front, should be the part that shares in leadership. Of these instru-

ments, the first they fashioned were the light-bearing eyes, which they bound in for the following reason. They contrived that the kind of fire which does not burn but gives off a gentle light should become a body, akin to each day's light. For the pure fire within us, which is sibling to this fire, they made to flow through the eyes, smooth and dense. They compressed the whole eye, but especially its center, [45c] so that it keeps in everything coarser and lets through only fire of this kind, pure. Now when there is daylight around the stream of vision, like falls in with like and they coalesce, forming a single homogeneous body along the line of sight of the eyes, wherever the fire streaming from within meets something outside and presses against it. This whole body, being affected alike because it is alike, passes on the motions of whatever it touches, [45d] or whatever touches it, through the whole body to the soul, and produces the sensation by which we say we see. But when the kindred fire departs at night, the visual stream is cut off. Going out into something unlike itself, it is altered and quenched, no longer being of one nature with the neighboring air, since the air has no fire. So it stops seeing, and it also brings on sleep. For the gods devised the eyelids to protect sight, and when they [45e] close, they shut in the power of the fire within. This disperses and evens out the motions within, and when they are evened out, there is calm; and when the calm is deep, a sleep with few dreams falls on us. But when some larger motions are left behind, then according to their kind and the places where they remain, [46a] they produce images of the same kind and number, copied within us and remembered when we wake up outside. As for the making of images in mirrors and in all bright, smooth surfaces, it is no longer hard to see how this happens. All such images necessarily appear because the two fires, the inner and the outer, combine with each other, becoming one at the smooth surface each time and being reshaped in many ways. [46b] The fire from the face coalesces with the fire of vision at the smooth, bright surface. Left appears as right because opposite parts of the visual stream come into contact with opposite parts of the

object, contrary to the usual manner of impact. But right appears as right and left as left, conversely, when the light switches sides as it coalesces with what it coalesces with. 46c This happens when the smooth surface of a mirror, curving up on either side, throws the right part of the visual stream to the left and the left to the right. When the same mirror is turned lengthwise to the face, it makes the whole thing appear upside down, throwing the bottom of the ray to the top and the top back to the bottom.

All these things are among the auxiliary causes that the god uses as servants in bringing about, as far as possible, the form of the best. 46d But most people believe they are not auxiliary causes but the causes of everything, since they cool and heat, solidify and dissolve, and produce all such effects. Yet they are incapable of any reason or intelligence about anything. For the only thing among beings that can properly possess intelligence, we must say, is soul; and soul is invisible, whereas fire, water, earth and air have all come to be as visible bodies. The lover of intelligence and knowledge must pursue first the causes that belong to the intelligent nature, 46e and second those that come about through things that are moved by others and in turn move others by necessity. We too must do the same. We must speak of both kinds of causes, but separately: those that, with intelligence, are craftsmen of what is beautiful and good, and those that, bereft of understanding, produce each time whatever random disorder results. So much for the auxiliary causes that helped the eyes acquire the power they now have. Next we must speak of their greatest benefit, for the sake of which the god 47a gave them to us. Sight, in my view, has become the cause of the greatest benefit to us, since none of the present accounts of the universe would ever have been given if we had never seen stars or sun or heaven. As it is, the sight of day and night, of months and the circuits of years, of equinoxes and solstices, has devised number and given us the notion of time and the inquiry into the nature of the universe. From these 47b we have procured philosophy, and no greater good than this has ever come, or ever will

come, to the mortal race as a gift from the gods. This, I say, is the greatest good of the eyes. Why should we sing the praises of the other, lesser goods? A man who is no philosopher, if he were blinded, might lament and mourn their loss in vain. Let us say, rather, that the cause of sight is this: the god invented it and gave it to us so that we might observe the revolutions of intelligence in heaven and use them for the revolutions of our own thought, which are akin [47c] to them, though ours are disturbed and theirs undisturbed; and so that, by learning them thoroughly and sharing in the natural correctness of their calculations, imitating the god's revolutions, which never wander at all, we might stabilize the wandering ones in ourselves. The same account holds, again, for voice and hearing: they were given by the gods for the same purposes and for the same reasons. For speech was ordained for these very purposes and contributes the largest share to them; and so much of music as uses the voice [47d] for hearing was given for the sake of harmony. And harmony, whose motions are akin to the revolutions of the soul within us, is useful to one who makes intelligent use of the Muses not for irrational pleasure, as it now seems to be, but as an ally given by the Muses against the untuned revolution of the soul that has arisen in us, to bring it into order and concord with itself. And rhythm too was given by the same gods for the same purpose, as a helper against the unmeasured and graceless [47e] condition that has arisen in most of us.

NECESSITY AND THE RECEPTACLE

Timaeus makes a new start with necessity and introduces a third kind, the receptacle or space.

TIMAEUS Now what we have said so far, with minor exceptions, has set out what was crafted by intelligence. But we must also set beside it in our account what comes about through necessity. For [48a] the birth of this cosmos was a mixed one, generated from a combination of necessity and intelligence. Intelligence ruled over necessity by persuading it to lead most of the things that

come to be toward what is best. In this way and on these terms, through necessity yielding to intelligent persuasion, this universe was constituted in the beginning. So if one is to tell truly how it came to be, one must also mix in the form of the wandering cause, and how it naturally moves things. We must therefore [48b] go back, take a fresh starting point suited to these same matters, and begin again from the beginning about them, just as we did about the earlier ones. We must look at the nature of fire, water, air and earth themselves before the birth of heaven, and at their properties before that. For so far no one has explained how they came into being. We speak as if people knew what fire is, and each of the others, and we posit them as principles, the elements, or letters, of the universe, when anyone with even a little sense should not reasonably liken them even to the class [48c] of syllables.[20] For now, let our position be this. We must not speak now of the principle or principles of all things, or however one sees them, for no other reason than that it is hard to make my views clear in the present manner of exposition. So you must not suppose that I should speak of them, nor could I persuade myself that I would be right to take on [48d] so great a task. Keeping to what I said at the start, the power of likely accounts, I will try to give an account that is as likely as any other, and more so, and to speak from the beginning, as before, about each thing and about all things together. So now too, at the start of what we say, let us call on god as savior to bring us safely through a strange and unfamiliar exposition to the doctrine of likelihood, [48e] and let us begin again.

Let this new beginning about the universe be divided more fully than the earlier one. Then we distinguished two kinds; now we must reveal a third, different kind. The two were enough for what was said before: one posited as the form of the model, intelligible and always the same; and a second, the imitation [49a] of the model, which has becoming and is visible. A third we did not distinguish then, thinking the two would be enough. But now the argument seems to compel us to try to bring to light in

20 *Stoicheia,* "elements," also means the letters of the alphabet.

words a difficult and obscure kind. What power and nature should we suppose it has? Above all this: that it is the receptacle of all becoming, its nurse, as it were.[21] That is true, but we must speak of it more clearly. And that is hard, [49b] especially because for its sake we must first raise difficulties about fire and the things that go with fire. It is hard to say of each of them which we should really call water rather than fire, and which should be called any one of them rather than all of them, each individually, in a way that uses a trustworthy and stable account. How, then, and in what way, and what could we reasonably say about them, having worked through this very difficulty? First, what we have now named water, when it solidifies, we see (so we think) becoming stones and earth; [49c] and this same thing, when it melts and disperses, becoming wind and air; air, when it is ignited, becoming fire; and fire in turn, compressed and quenched, going back into the form of air; and air again, coming together and condensing, becoming cloud and mist; and from these, compressed still further, flowing water; and from water, earth and stones once more. So, as it appears, they pass on their generation to one another in a cycle. Since, then, none of these [49d] ever appears as the same thing, which of them could anyone firmly insist is this thing and not another, without being ashamed of himself? No one could. By far the safest course is to speak of them in this way. Whatever we see constantly coming to be at different times in different places, fire for example, we should call not "this" fire but, on each occasion, "what is such" fire; and water not "this" but always "what is such"; nor should we speak of anything else as having some stability, among all the things [49e] we point to with the words "this" and "that," thinking we are indicating something. For it slips away and does not stay for the expression "this" or "that" or "to this," or any expression that shows them to be stable beings. We must not speak of them individually in these terms, but call "such" what is always recurring alike, in the case of each and of all together. So we call fire what is such throughout, and likewise everything that has

21 The "receptacle" (*hypodochē*) is called "space" (*chōra*) from 52a on.

becoming. But that in which each of them always appears as it comes into being, and from which it perishes again, [50a] is the only thing we should call by the words "this" and "that." Anything of some quality, whether hot or white or any of the opposites, or anything made of them, we should not call that thing at all. But we must try to speak of it again, still more clearly. Suppose someone molded every shape out of gold and never stopped remolding each shape into all the others. If someone pointed to one of them and asked [50b] what it is, by far the safest answer, as regards truth, would be that it is gold. The triangle, and all the other shapes that came to be in it, he should never call beings, since they change even as one says so. He should be content if they will accept even the description "such" with any safety. The same account holds for the nature that receives all bodies. It must always be called the same, for it never departs from its own power at all. It always receives all things, [50c] and has never in any way taken on a shape like any of the things that enter it. By nature it is laid down as a matrix for everything, moved and reshaped by the things that enter it, and because of them it appears different at different times. The things that enter it and leave it are imitations of the things that always are, stamped from them in a strange way that is hard to describe, which we will pursue another time. For the present, then, we must conceive of three kinds: [50d] what comes to be; that in which it comes to be; and that in whose likeness what comes to be is born. It is fitting, too, to liken the receiver to a mother, the source to a father, and the nature between them to an offspring. And we must understand that, if the impression is to be varied, displaying every variety to see, that in which the impression is formed would not be well prepared unless it were devoid of all the forms that it [50e] is to receive from elsewhere. For if it were like any of the things that enter it, then whenever things of an opposite or wholly different nature came, it would copy them badly in receiving them, since its own appearance would show through. That is why what is to receive all kinds within itself must be devoid of all forms. It is like the makers of fragrant oint-

ments: they first contrive this same condition, making the liquids that are to receive the scents as odorless as possible. And those who try to impress shapes in some soft material allow no shape at all to be visible in it beforehand, but first smooth it out and make it as even as possible. [51a] In the same way, what is to receive well, again and again and throughout its whole extent, the likenesses of all the things that always are, must itself by nature be devoid of all forms. That is why we should call the mother and receptacle of what has come to be visible and wholly perceptible neither earth nor air nor fire nor water, nor any of the things that come from these or that these come from. But if we call it an invisible and shapeless kind, all-receiving, that shares [51b] in the intelligible in some most perplexing way and is very hard to grasp, we will not be lying. Insofar as its nature can be reached from what has been said, one would put it most correctly like this: the part of it that has been ignited appears each time as fire, the part that has been liquefied as water, and it appears as earth and air insofar as it receives imitations of these. But we must examine the following point, drawing distinctions about them in argument. Is there a fire itself by itself, and are all the things we keep speaking of in this way each [51c] itself by itself? Or are the things we see, and everything else we perceive through the body, the only things that have this sort of reality, with nothing else besides them in any way at all, so that we speak idly whenever we say there is an intelligible form of each thing, and it turns out to be nothing but words? Well, it is not right to leave the present question untried and unjudged and just insist that it is so; nor should we tack another lengthy side issue [51d] onto a lengthy discussion. But if an important distinction could be drawn in a few words, that would be most timely. So here is how I cast my own vote. If intelligence and true opinion are two kinds, then these things certainly exist by themselves: forms we cannot perceive, that are only thought. But if, as it seems to some, true opinion differs in no way from intelligence, then all the things we perceive through the body must be taken as the most stable. [51e] But we must say they are two, since

they have come to be separately and are unlike. One arises in us through teaching, the other through persuasion. One is always accompanied by a true account, the other is without reason. One cannot be moved by persuasion, the other can be persuaded otherwise. And every man, we must say, shares in true opinion, but intelligence belongs to the gods and to a small class of human beings. This being so, [52a] we must agree that there is, first, the form that stays the same, unborn and indestructible, neither receiving anything else into itself from elsewhere nor itself going anywhere into anything else, invisible and otherwise imperceptible: this is what thought has been allotted to study. Second is what shares its name and resembles it: perceptible, generated, always carried about, coming to be in some place and perishing from there again, grasped by opinion together with perception. Third is the kind that is space, which always is and does not admit destruction, [52b] which provides a seat for all things that have becoming, and is itself grasped without perception, by a kind of illegitimate reasoning, and is hardly an object of belief. It is what we look toward as in a dream when we say that everything that is must be somewhere, in some place, occupying some space, and that what is neither on earth nor anywhere in heaven is nothing.[22] All these things, and others akin to them, even concerning the sleepless nature that truly is, we are unable, because of this dreaming, [52c] to wake up and distinguish and state truly. An image, since not even that for which it has come into being belongs to it, but it is always carried along as an appearance of something else, must for this reason come into being in something else, clinging to being somehow or other, or else be nothing at all. But what really is has the support of the precise and true account: that as long as one thing is one thing and the other another, neither will ever come to be in the other so that the same thing becomes [52d] at once one and two.

Let this, then, be the account my vote has reckoned, given in summary: that being, space and becoming exist, three things in

three ways, even before heaven came into being. The nurse of becoming, being liquefied and ignited, receiving the shapes of earth and air, and undergoing all the other affections that go with these, [52e] appears to the eye in every kind of form. But because it is filled with powers that are neither alike nor evenly balanced, no part of it is in balance: it sways unevenly in every direction, is shaken by those things, and, being moved, shakes them in turn. And the things that are moved are always carried in different directions and separated, as with the things shaken and [53a] winnowed by sieves and other tools for cleaning grain: the dense and heavy settle in one place, while the loose and light are carried off to another. In the same way, at that time the four kinds were shaken by the receiver, which was itself moving like an instrument that produces shaking. The most unlike were separated furthest from one another, and the most alike were pushed most closely together. That is why the different kinds occupied different places even before the universe was ordered out of them and came into being. Before this, all these things were without ratio or measure. [53b] When the universe was first being set in order, fire, water, earth and air had some traces of their own nature, but were altogether in the condition one would expect of anything when god is absent from it. Such being their nature at that time, he first gave them distinct shapes with forms and numbers. That the god constructed them to be as beautiful and as good as possible, out of things that were not so, let this be laid down by us above all, as something we always say. But now I must try to explain to you the arrangement and birth of each of them [53c] in an unfamiliar account. Still, since you have been through the paths of learning by which what I say must be demonstrated, you will follow.

22 "Illegitimate" renders Greek *nothos*, used of a child born outside marriage: a reasoning that is not fully legitimate.

THE ELEMENTS AND THE REGULAR SOLIDS

Earth, water, air and fire are built from two triangles into four regular solids that change into one another.

TIMAEUS First, then, it is clear to everyone, I suppose, that fire, earth, water and air are bodies. Every form of body also has depth. And depth must necessarily be bounded by surface; and every rectilinear surface is composed of triangles. All triangles derive from two [53d] triangles, each having one right angle and the other angles acute. One of them has on either side half of a right angle, divided between equal sides; the other has unequal parts of a right angle, allotted to unequal sides. This we posit as the origin of fire and the other bodies, proceeding according to the account that combines likelihood with necessity. The principles still higher than these are known to god, and to whoever among men is dear to him. We must now say which four bodies would be the [53e] most beautiful: unlike one another, but some of them able to come into being from one another when they dissolve. If we achieve this, we have the truth about the generation of earth and fire and of the terms in proportion between them. For we will concede to no one that there are visible bodies more beautiful than these, each of a single kind. So we must strive to fit together the four kinds of bodies that excel in beauty, and be able to say we have grasped their nature well enough. [54a] Of the two triangles, the isosceles has been allotted only one nature, the elongated one infinitely many. So of the infinitely many we must choose the most beautiful, if we are to begin properly. If anyone can pick out and name a more beautiful one for constructing these bodies, he wins, not as an enemy but as a friend. We, however, posit as the most beautiful of the many triangles a single one, passing over the rest: the one from which, taken as a pair, the equilateral triangle is composed as a third figure. [54b] Why, would take a longer account; but whoever refutes this and discovers that it is otherwise will win the prize with our goodwill. So let two triangles be chosen, from which the bodies of

fire and of the others have been contrived: the isosceles, and the one whose longer side is always three times the shorter in square. What was said unclearly before must now be defined more precisely.[23] The four kinds all appeared to come into being through one another and into one another, but this appearance was not correct. For four kinds do come into being from 54c the triangles we have chosen: three from the one with unequal sides, while the fourth alone is fitted together from the isosceles triangle. So not all of them can dissolve into one another, with many small ones forming a few large ones and vice versa; but three of them can. Since these three are all made from one triangle, when the larger bodies break up, many small ones will be composed from the same triangles, taking on the shapes proper to them; and again, when many small ones are broken up 54d into their triangles, they would become a single number making up a single mass, and produce one large body of another form. Let that be our account of their coming into being from one another. The next thing to say would be what form each of them has come to have, and from the combination of how many numbers. First, then, will come the first form, the smallest in construction. Its element is the triangle whose hypotenuse is twice the length of its shorter side. When a pair of these triangles is put together along the diagonal, and this is done three times, 54e with their diagonals and short sides meeting at the same point as a center, a single equilateral triangle is formed out of triangles six in number. When four equilateral triangles are put together, meeting three plane angles at a time, they make one solid 55a angle, the one that comes next after the most obtuse of plane angles. When four such solid angles are completed, the first solid form is constructed, one that divides the whole of a sphere around it into equal and similar parts.[24] The second is formed from the same triangles, combined into eight equilateral

23 The second triangle is the half of an equilateral triangle, with angles of 30, 60 and 90 degrees; the square on its longer leg is three times the square on its shorter leg.

24 The first solid is the tetrahedron, or pyramid.

triangles, which make one solid angle from four plane angles; and when six such solid angles have been formed, the second body is complete. The third is formed from twice sixty elementary triangles fitted together, [55b] with twelve solid angles, each enclosed by five plane equilateral triangles; it has twenty equilateral triangles as its faces. And once it had generated these, the first of the elementary triangles was released from its task. But the isosceles triangle generated the nature of the fourth body: put together in fours, with their right angles brought together at the center, they make a single equilateral quadrangle. Six of these [55c] fitted together produced eight solid angles, each formed by three plane right angles. The shape of the resulting body is a cube, with six plane square faces of equal sides.[25] There was still one construction left, a fifth, and the god used it for the universe, decorating it with figures.[26]

Suppose someone, reasoning about all this properly, were puzzled whether we should say there are infinitely many worlds or a limited number. [55d] He would consider the view that they are infinitely many to belong to someone truly unlimited in his inexperience of what he ought to be experienced in. But whether it is right to say that there is truly one world or five, he might more reasonably stop at that point and puzzle over it. Our view, according to the likely account, declares it to be by nature one god; another, looking to other considerations, will judge otherwise. But we must set him aside, and distribute the kinds that have now come into being in our account among fire, earth, water and air. Let us give the cubic form to earth. [55e] For earth is the least mobile of the four kinds and the most malleable of bodies, and whatever has the most stable bases must necessarily be of this kind. As for bases, among the triangles we posited at the beginning, the one with equal sides is by nature more stable than the one with unequal sides; and of the plane figures composed from each, the equilateral square necessarily rests more firmly than the equilateral triangle, both in its parts and as a

25 The second is the octahedron, the third the icosahedron, the fourth the cube.
26 The fifth is the dodecahedron, with twelve pentagonal faces.

whole. So [56a] in assigning this form to earth we preserve the likely account. To water we give the least mobile of the remaining forms, to fire the most mobile, and to air the one in between. The smallest body goes to fire, the largest to water, and the intermediate to air; and again, the sharpest to fire, the second sharpest to air, and the third to water. Of all these, then, the one with the fewest faces must by nature be the most mobile, since it is in every way the most cutting [56b] and sharpest of all, and also the lightest, being composed of the fewest of the same parts. The second must have these same properties in the second degree, and the third in the third. So let it be, according to correct reasoning and the likely account, that the solid form of the pyramid is the element and seed of fire. The second in order of generation we will say is the element of air, and the third of water. All these, then, we must think of as so small that no single one [56c] of any kind is seen by us, because of their smallness; but when many are gathered together, their masses are seen. And as for the proportions of their numbers, their motions and their other powers, we must think that the god, wherever the nature of necessity yielded willingly, when persuaded, completed all these precisely and fitted them together in proportion.

From everything whose kinds we have described, the likeliest [56d] account of how things stand would be this. Earth, when it meets fire and is broken up by its sharpness, would drift about—whether it was broken up within fire itself, or within a mass of air or of water—until its parts meet somewhere, fit themselves together again, and become earth; for they could never pass into any other form. But water, when divided by fire, or by air too, can re-form into one body of fire and two [56e] of air; and the fragments of air, from a single particle broken up, would become two bodies of fire. And again, when fire is enveloped by air, or by water, or by some earth—a little of it amid a great deal, moving amid moving things—and it fights, is beaten, and is shattered, two bodies of fire combine into one form of air. And when air is overpowered and broken into pieces, from two whole particles and a half, one whole form of water will be com-

pacted. Let's reason it out once more this way. When one of the 57a other kinds is caught in fire and cut by it with the sharpness of its angles and edges, then if it re-forms into fire's nature, it stops being cut—for no kind that is alike and the same as itself can bring about any change in, or suffer anything from, what is in the same and like condition—but so long as it is passing into something else and, being weaker, fights something stronger, it goes on being broken up. Likewise, when the smaller particles are surrounded by many larger ones—few 57b among many—and are shattered and quenched, then if they are willing to re-form into the shape of the victor, they stop being quenched, and from fire comes air, from air water. But if they are passing into these, and one of the other kinds meets them and fights, they go on being broken up until either they are thrust out entirely and, broken up, escape to their kin, or else are defeated and, becoming one out of many and like the victor, stay on to live with it. 57c And through these processes, too, they all keep exchanging their places. For the bulk of each kind is separated off, each in its own region, because of the motion of the receptacle; but whatever at any moment becomes unlike itself and like others is carried by the shaking toward the region of the things it has come to resemble.

That, then, is how all the unmixed, primary bodies have come about, and through such causes. As for the fact that other kinds have arisen within their forms, we must put this down to the construction of each of the two elements: 57d each did not originally produce a triangle of just one size, but smaller and larger ones, as many in number as there are kinds within the forms. That is why, when they are mixed with themselves and with one another, their variety is limitless—and anyone who means to give a likely account of nature must become a student of it.

Now about motion and rest—how, and under what conditions, they arise—unless we reach some agreement, much would stand 57e in the way of our reasoning from here on. Something has already been said about them; but we must add this: motion is never willing to be present in uniformity. For it is hard, or

rather impossible, for what is to be moved to exist without something to move it, or what will move it without something to be moved. Where these are absent there is no motion, and they can never be uniform. So let's always place rest in uniformity and motion in nonuniformity; [58a] and the cause of the nonuniform nature, in turn, is inequality. The origin of inequality we have already described. But how it is that the bodies have not been sorted out completely by kinds and stopped moving and traveling through one another—this we did not say. So we will go back and explain it as follows. The circuit of the universe, once it had taken in the kinds, being circular and naturally inclined to draw together upon itself, squeezes everything and allows no empty space to be left. That is [58b] why fire has penetrated into everything most of all, and air second, since it is second in fineness, and the rest in the same way. For bodies made of the largest parts leave the largest gaps in their structure, and the smallest the least. So the squeezing of this compression pushes the small particles into the gaps between the large. Then, as small particles are set beside large, and the smaller split the larger apart while the larger press the smaller together, everything shifts up and down toward its own region; [58c] for as each changes its size, it also changes its position in space. In this way, and for these reasons, the generation of nonuniformity is continually preserved, and it keeps these bodies in the perpetual motion that is and will be unceasing.

KINDS OF EACH ELEMENT

The varieties of fire, air, water and earth are described, including metals, ice, juices, stone and salt.

TIMAEUS Next we must recognize that many kinds of fire have come to be. There is flame, for example; what streams off from flame, which does not burn but gives light to the eyes; and what is left of fire in [58d] glowing embers after the flame has been quenched. Likewise with air: the clearest is called by the name "aether," the murkiest "mist" and "darkness," and there are other

forms without names, which have arisen because of the inequality of the triangles. The kinds of water divide first into two: one liquid, the other fusible. The liquid kind, because it shares in those kinds of water that are small and unequal, has come to be mobile, both in itself and when moved by something else, owing to its nonuniformity and the character of its shape. 58e The other kind, made of large, uniform particles, is more stable than the first and heavy, compacted by its uniformity. But when fire enters and breaks it up, it loses its uniformity, and having lost that, it has more share in motion; and once it has become mobile, it is pushed by the neighboring air and spread out over the ground. Each of these processes has its name: the breaking down of its masses is called "melting," and its spreading out over the ground "flowing." 59a When the fire escapes from it in turn—and since it does not go out into a void—the neighboring air is pushed, and it presses the liquid mass, still mobile, into the places the fire has left, and packs it together with itself. The mass, packed together and recovering its uniformity now that fire, the craftsman of nonuniformity, is departing, settles back into its former state. The departure of the fire is called "cooling," and the contraction once it has gone, "being frozen solid." Of all 59b the waters we have called fusible, the densest, formed from the finest and most uniform particles—a kind with a single form, touched with a gleaming yellow color—is gold, the most precious of possessions, which has been strained through rock and solidified. A shoot of gold, very hard because of its density, and dark in color, is called adamant.[27] Another is close to gold in its particles but has more than one form. In one respect it is denser than gold, and it has taken in a small, fine portion of earth, so that it is harder; but 59c in another respect it is lighter, because it has large gaps inside it. This kind of the bright, solidified waters, once formed, has become copper. The earth mixed into it, when the two grow old and separate from each other again, becomes visible by itself and is called verdigris. As for the other things of

27 Adamant: an unidentified very hard metal; the word later came to mean any unbreakable substance.

this sort, it is no complicated matter to work them out if one follows the method of likely stories. When someone, for the sake of rest, lays aside accounts of the things that always are, and takes a pleasure he will never regret in considering [59d] likely accounts of becoming, he makes for himself a moderate and sensible pastime in life. So let's give that pastime free rein now too, and go through what is next in likelihood on the same subjects, as follows. Water mixed with fire—the kind that is fine and liquid (called "liquid" because of its motion and the way it rolls along the ground), and soft, too, because its bases, being less stable than those of earth, give way—when this is separated from fire and isolated from air, [59e] it becomes more uniform and is compressed into itself by the particles going out. Having solidified this way, the part that is most affected above the earth is called hail, and on the earth ice; the part less affected, still only half-solid, is called snow above the earth, and on the earth, when it has solidified out of dew, frost. Most forms of water are mixed with one another. As a whole the kind is called "juices," [60a] since they are strained through plants growing from the earth. Because of the mixing, each has become dissimilar, and while they have produced many other kinds without names, four forms that contain fire and are especially clear have been given names. The one that warms the soul along with the body is wine. The one that is smooth and dilates the visual stream, and so looks bright, gleaming and glossy, is the oily form: pitch, castor oil, olive oil itself, and everything else with the same power. The one that relaxes [60b] the contracted passages around the mouth to their natural state, and by this power produces sweetness, has got "honey" as the name most generally applied to them all. And the one that dissolves flesh by burning, a frothy kind set apart from all the juices, has been named "acid sap."[28]

Of the forms of earth, the kind strained through water becomes a stony body in the following way. When the water mixed with it is broken up in the mixing, it changes into the

28 "Acid sap" renders *opos*, a pungent plant juice such as the sap of the fig tree, which was used to curdle milk.

form of air; and having become 60c air, it rushes up to its own region. But there was no void above them, so it pushed the neighboring air. That air, being heavy, when pushed and poured around the mass of earth, squeezed it hard and pressed it into the places the new air had risen from; and earth pressed together by air so that water cannot dissolve it forms rock—the finer kind transparent, made of equal and uniform parts, the uglier the opposite. The kind from which all the moisture has been snatched away by the speed of fire, 60d and which is more brittle than rock, is what we have named pottery. Sometimes, when some moisture is left and the earth has been melted by fire, it cools and becomes the stone that is black in color. There are two more that are likewise separated off, after mixing, from a great deal of water, and are made of finer parts of earth and are salty; they become half-solid and can be dissolved again by water. One, a kind that cleans oil and earth, is soda; the other, which blends well in combinations 60e that affect the sense of taste, is salt, a substance dear to the gods, as custom has it. The compounds of both, which are soluble not by water but by fire, are solidified for the following reason. Fire and air do not melt masses of earth. Their particles are smaller than the gaps in earth's structure, so they pass through plenty of room without forcing it, leave it undissolved, and so leave it unmelted. But the particles of water, being larger, force their way through, break it up, and melt it. 61a For earth that has not been compacted by force is broken up in this way only by water, while earth that has been compacted is broken up by nothing but fire, since no entry is left for anything except fire. Again, the most forcibly compacted water is dispersed by fire alone, but a weaker compaction by both fire and air, air entering through the gaps, fire through the triangles as well. Air compacted by force is broken up by nothing except by acting on its elements; air not compacted by force is melted only by fire. In bodies mixed of earth and water, so long as 61b the water in them occupies the gaps in the earth, forcibly compressed there, the particles of water approaching from outside have no way in; they flow around the

whole mass and leave it unmelted. But the particles of fire enter the gaps in the water, and, doing to the water what water does to earth and fire to air, they alone turn out to be the cause of the compound body's melting and flowing. Such bodies are, on the one hand, those with less water than earth—the whole kind to which glass [61c] belongs, and all the stones called fusible—and on the other, those with more water: all the waxlike and incense-like substances that are solidified.

PROPERTIES FELT BY THE WHOLE BODY

Hot and cold, hard and soft, heavy and light, rough and smooth, pleasure and pain are explained.

TIMAEUS We have now more or less set out the forms made various by their shapes, their combinations, and their changes into one another. Next we must try to make clear the causes through which their properties have come about. First, then, the things we are discussing always presuppose sensation; but we have not yet described the origin of flesh and of what pertains to flesh, or of the mortal part of the soul. It happens, though, that these cannot be adequately discussed apart [61d] from the properties connected with sensation, nor those apart from these, and it is scarcely possible to do both at once. So we must first assume one set, and come back later to what we have assumed. In order, then, that the properties may be discussed right after the kinds, let us first take as given what concerns body and soul. First, let's see why we call fire hot, looking at it this way: bearing in mind the dividing and cutting that it does to our body [61e] . That the experience is something sharp, nearly all of us perceive. But the fineness of its edges, the sharpness of its angles, the smallness of its particles, and the speed of its motion—which together make it intense and cutting, so that it sharply cuts [62a] whatever it meets—we must work out by recalling how its shape came to be. It is this nature, more than any other, that divides our bodies and chops them into small pieces, and so it has fittingly given to what we now call "hot" both its character and its name. The

opposite of this is obvious, but still, let it not go without an account.[29] When the larger particles of the moisture around the body enter it, they push out the smaller ones, and, unable to slip into their places, they compress the moisture in us 62b and, from being nonuniform and moving, make it motionless through uniformity and compression, and so congeal it. But what is being pressed together against its nature fights, in accordance with its nature, pushing itself apart in the opposite direction. This fighting and shaking have been named "trembling" and "shivering," and this whole experience, and what produces it, got the name "cold." "Hard" is whatever our flesh gives way to; "soft," whatever gives way to our flesh; and things are called so in relation to one another in the same way. What gives way is what stands on a small base; but the form made of 62c square bases, being set very firmly, is the most resistant, as is whatever is packed together into the greatest density and so offers the most resistance. Heavy and light would be shown most clearly if examined together with the nature of what is called "below" and "above." It is not at all right to believe that by nature there are two regions, opposite each other, dividing the universe in two—one below, toward which everything having any bodily bulk moves, and one above, to which everything goes only against its will. For since the whole 62d heaven is spherical, all the points that stand equally far from the center as its extremities must be extremities in the same way, and the center, being the same distance from the extremities, must be thought to be opposite to all of them. With the cosmos made this way, which of these places could anyone call "above" or "below" without being justly thought to use a name that doesn't fit at all? The central place in it cannot rightly be called either below or above by nature; it is simply in the center. And the circumference is neither central, nor does it have any part differing from another in its relation to the center, or to any of the places opposite. When something is alike in every direction, what opposite names could anyone

29 Plato seems to hear a link between *thermon*, "hot," and *kermatizein*, "to chop into pieces."

apply to it, and in what sense would he think he was speaking correctly? For even if there were some solid body, evenly balanced, at the center of 63a the universe, it would never be carried toward any of the extremities, because they are alike in every direction. And if someone walked around it in a circle, he would often stand at his own antipodes and call the same spot on it both "below" and "above." For since the whole, as we just said, is spherical, it is not the mark of a sensible person to say that it has one region below and another above. But where these names came from, and in what circumstances we have grown used to dividing even the whole heaven by them 63b and speaking this way—on these points we must reach agreement by making the following assumptions. Suppose someone were in the region of the universe allotted chiefly to the nature of fire, where the greatest mass of it would also be gathered, the mass toward which it moves. Suppose he stood on it, and had the power to do this, and took away parts of the fire, put them on scales and weighed them: as he lifted the beam and dragged the fire by force into the air, which is unlike it, 63c clearly he would overpower the smaller quantity more easily than the larger. For when two things are lifted together by a single force, the smaller must follow the force more readily, and the larger, pulling back more, less readily; and the large quantity is called heavy and said to move downward, the small one light and said to move upward. We must catch ourselves doing exactly the same thing in our own region. Standing on the earth, we separate earthy kinds, and sometimes earth itself, and drag them into the unlike air by force and against nature, while both cling to their 63d kin. The smaller follows us into the unlike element more easily than the larger, and sooner, when we force it. So we have called it light, and the region into which we force it "above"; and the opposite condition "heavy" and "below." These things, then, must stand in different relations to one another, because the main masses of the kinds occupy regions opposite to one another. For what is light in one region, compared with what is light in the opposite region, 63e and heavy with heavy, below

with below, and above with above—all these will be found to become and to be opposite, oblique, and in every way different from one another. But there is one thing to understand about all of them: it is the path of each toward its kin that makes the moving body heavy, and the region it moves toward "below"; and what behaves the other way gets the other names. Let that stand as our account of the causes of these properties. The cause of smoothness and roughness anyone, I think, could see and explain to someone else: hardness mixed with nonuniformity produces roughness, and 64a uniformity together with density produces smoothness.

The most important remaining topic among the properties common to the whole body is the cause of the pleasures and pains in the cases we have gone through, and in all those that have acquired sensations through the parts of the body and hold pains and pleasures that accompany them. Let's grasp the causes of every property, perceived or unperceived, in this way, recalling the distinction we drew earlier between what is 64b easily moved and what is hard to move; for this is the track we must follow to catch everything we mean to catch. What is naturally easy to move, when even a slight affection strikes it, spreads it around, particles passing the same effect on to one another, until it reaches the intelligent part and reports the property of the agent. But what is of the opposite nature, being stable and not spreading anything around, is only affected 64c and does not move any of its neighbors. Since the particles do not pass it on to one another, the first affection stays unmoved in them and never reaches the whole living being, and so leaves what was affected without sensation. This is true of bones and hair, and all the other parts in us that are mostly earth; the former holds above all for sight and hearing, because the power of fire and air in them is greatest. Pleasure and pain must be thought of like this. An affection that happens to us against nature and 64d violently, all at once, is painful; a return to our natural state all at once is pleasant; one that happens gently and little by little is not perceived; and the opposite cases go the opposite way. Any-

thing that happens easily is perceived as much as anything can be, but has no share in pain or pleasure—for instance, the affections of vision itself, which earlier we said becomes by day a body grown together with ours. For in vision, cuts and burns and whatever else it suffers produce no pains, nor again 64e pleasures when it returns to the same form; but its sensations are the greatest and clearest, of whatever affects it and of whatever it strikes and touches, since there is no force at all in its dividing and combining. But bodies made of larger particles yield to the agent reluctantly and pass the motions on to the whole; so they have pleasures and pains—pains when they are forced out of their natural state, 65a pleasures when they are restored to it. Those that undergo their losses and depletions little by little, but their replenishments all at once and in large amounts, are insensitive to the depletion but sensitive to the replenishment; so they give the mortal part of the soul no pains, but the greatest pleasures. This is plain in the case of fragrant smells. But those that are forced out of their state all at once, and are restored only little by little, and with difficulty, to their 65b former state, produce the opposite of the previous cases in every way. This is plain in burns and cuts to the body.

TASTE, SMELL, HEARING AND COLOR

The particular senses are explained through the shapes and motions of particles.

TIMAEUS We have now more or less covered the properties common to the whole body, and the names given to what produces them. Next we must try to speak about what happens in particular parts of us—both the affections and, in turn, the causes of what produces them—if we 65c can. First, then, we must make clear, as far as possible, what we left out earlier in speaking of juices: the properties peculiar to the tongue. These too, like most things, appear to come about through certain contractions and dilations, and besides to depend more than the others on roughness and smoothness. When earthy particles enter

around the little veins, which stretch 65d to the heart as testers, so to speak, for the tongue, and fall onto the moist, delicate parts of the flesh, they melt and contract the little veins and dry them up. If they are rougher, they appear astringent; if less roughening, harsh. Those that rinse these veins and wash away everything around the tongue, when they do this beyond measure and go so far as to melt away some of the tongue's own substance—as the power of soda 65e does—are all called bitter. Those that fall short of the soda-like character and rinse only moderately seem salty, without harsh bitterness, and more agreeable to us. Those that share in the heat of the mouth and are smoothed by it, catching fire along with it and burning in turn what heated them, and rising because of their lightness toward the senses of the head, cutting 66a everything they fall upon—because of these powers, all such things have been called pungent. Again, there are particles already thinned by decay that slip into the narrow veins and are in proportion both to the earthy particles present there and to those of air, so that they set them moving around one another and make them churn. As they churn, they fall around one another, and slipping into one another they form hollows, stretching around the particles that enter. 66b When a hollow film of moisture, sometimes earthy and sometimes pure, is stretched around air, these become moist vessels of air, hollow, rounded bits of water. Those of pure moisture stand around transparent and are given the name "bubbles"; those of earthy moisture, moving and rising all together, are called "seething" and "fermenting." And the cause of these affections is called acid. Everything said about these has 66c an opposite affection, which comes from an opposite cause. When the structure of the particles entering in liquids is naturally akin to the condition of the tongue, it coats and smooths what has been roughened; of the parts that have been unnaturally contracted or relaxed, it draws the one together and loosens the other, and settles everything as far as possible in its natural state. Every such remedy for violent affections is pleasant and welcome to everyone, and has been called sweet. 66d

So much for those. As for the power of the nostrils, there are no forms in it. The whole class of smells is half-formed, and no form happens to have the proportions needed to have any smell. The veins in us concerned with smell were made too narrow for the kinds of earth and water, and too wide for those of fire and air; so no one has ever perceived any smell from any of these. Smells arise only from things that are getting wet, rotting, melting, or being turned to vapor. For when 66e water is changing into air and air into water, smells arise in the interval between; and all smells are smoke or mist—mist being what is passing from air into water, and smoke what is passing from water into air. That is why all smells are finer than water and coarser than air. This becomes clear whenever something blocks the breathing passage and a person draws breath in by force; then no smell filters through with it, and the breath, stripped of smells, comes 67a in by itself. So the varieties of smell are two, without names, not made of many forms or of simple ones; the only two clearly spoken of here are the pleasant and the painful. The one roughens and does violence to the whole cavity lying between the top of our head and our navel; the other soothes this same region and gently restores it to its natural state.

The third sensory part in us that we must examine is the one concerned with 67b hearing, and we must say by what causes its affections come about. In general, let us posit that sound is a blow transmitted by the air through the ears, and through the brain and the blood, to the soul; and that the motion it causes, beginning in the head and ending around the seat of the liver, is hearing. When the motion is fast, the sound is high; when slower, lower. When it is uniform, the sound is even and smooth, and when the opposite, rough. 67c When the motion is large, the sound is loud, and when the opposite, soft. The consonance of sounds must be dealt with in what we say later.

There remains a fourth sensory kind, which we must divide up, since it contains many varieties within it. All of these together we have called colors: a flame that streams off from each body, with particles proportioned to sight so as to be per-

ceived. About sight itself, and the causes of its origin, we spoke earlier [67d] . Here, then, is the likeliest and most fitting account of colors, with due moderation. The particles carried off from other things and falling on sight are some smaller, some larger, and some equal to the parts of sight itself. The equal ones are not perceived, and these we call transparent; the larger and smaller, some contracting sight and others dilating it, are akin to the hot and cold in the flesh, and [67e] to the astringent things in the tongue and the heating things we called pungent. These are white and black: affections that are the same as those, but arising in another kind, and appearing different for the reasons given. So we should name them this way: what dilates the visual stream is white, and its opposite black. A swifter motion, of a different kind of fire, strikes and dilates the visual stream right up to the eyes, forcing [68a] apart and melting the very passages of the eyes, and pours out of them fire and water in a mass, which we call tears. It is itself fire, meeting fire from the opposite direction. As the one fire leaps out as if from a flash of lightning, and the other enters and is quenched in the moisture, colors of every sort arise in this turmoil. We have called the experience "dazzling," and what produces it "bright" and "gleaming." [68b] Again, the kind of fire between these reaches the moisture of the eyes and mixes with it, but does not gleam. The radiance of fire mixing through the moisture produces a blood-like color, and we call it red. Bright mixed with red and white becomes yellow. How much of each goes into which, even if one knew, there would be no sense in saying, since one could not give either a necessary or a likely account of it with any adequacy. Red [68c] blended with black and white gives purple; and dark violet, when black is blended more strongly with these after they have been mixed and burned. Tawny comes from a blend of yellow and gray, gray from white and black, and ochre from white mixed with yellow. White combined with bright and falling into deep black produces dark blue; dark blue mixed with white gives gray-blue; tawny with black gives leek-green. As for the [68d] others, it is fairly clear from these what mixtures to liken them

to in order to preserve the likely story. But if anyone should investigate these things by putting them to a practical test, he would be ignoring the difference between human and divine nature: a god has both the knowledge and the power to blend many things into one and to dissolve one back into many, but no human being is capable of either, now or at any time in the future. 68e

All these things, then, were so constituted by necessity at that time, and the craftsman of what is most beautiful and best took them over among the things that come to be, when he was begetting the self-sufficient and most perfect god. He used the causes connected with them as his assistants, but he himself crafted the good in everything that comes to be. That is why we must distinguish two forms of cause, the necessary and the divine. We must seek the divine in all things for the sake of 69a gaining a happy life, so far as our nature allows, and the necessary for the sake of the divine, reckoning that without the necessary it is impossible to understand those very things we are serious about, taken by themselves, or to grasp them, or to have any share in them at all.

THE MORTAL SOUL IN THE BODY

The young gods house the mortal soul in the chest and belly, apart from the divine head.

TIMAEUS Now that the kinds of cause lie ready to hand for us, sifted out like timber for carpenters, and the rest of our account must be woven together from them, let's go back briefly to the beginning and quickly make our way to the point from which we arrived here, 69b and then try to put an ending and a head on the story that fits what went before. As was said at the start, these things were in disorder, and the god created proportions in each of them, both in relation to itself and to one another, as many and in whatever way it was possible for them to be proportionate and commensurable. For at that time none of them had any share in these, except by chance, nor was there any-

thing at all worth naming among the things now named—fire, water, and the rest. He first 69c put all these in order, and then out of them constructed this universe, a single living being containing within itself all living beings, mortal and immortal. Of the divine beings he himself was the craftsman; the making of the mortal ones he assigned to his own offspring. They imitated him. Taking over an immortal principle of soul, they next turned a mortal body around it as if on a lathe and gave it the whole body as its vehicle, and within the body they built on another form of soul, the mortal one, which holds within itself terrible and unavoidable 69d affections: first pleasure, evil's strongest bait; then pains, which put good things to flight; boldness and fear besides, two senseless counselors; anger, hard to appease; and hope, easily led astray. Blending these with irrational sensation and with desire that will venture on anything, they composed the mortal kind as necessity required. And because of this, scrupling to pollute the divine except where absolutely necessary, they housed the mortal part apart from it, in 69e another dwelling of the body, building an isthmus and a boundary between the head and the chest and setting the neck between them, so that the two would be kept apart. In the chest, then, and in what is called the thorax, they bound the mortal kind of soul. And since one part of it was naturally better and the other worse, they partitioned the cavity of the thorax too, dividing it as 70a the women's quarters of a house are set apart from the men's, and placing the midriff between them as a wall.[30] The part of the soul that shares in courage and spirit, being eager to win, they housed nearer the head, between the midriff and the neck, so that it would listen to reason and, together with reason, forcibly hold down the tribe of the appetites whenever they were quite unwilling to obey the command and word from the citadel. The heart, 70b the knot of the veins and the spring of the blood that is carried vigorously around through all the limbs, they set in the guardroom. The purpose was this: when the fury of spirit boiled up, because reason had

30 Greek houses often kept separate quarters for the women of the household.

announced that some wrong was being done concerning the limbs, either from outside or by the appetites within, everything in the body capable of sensation would quickly perceive the exhortations and threats through all the narrow channels, obey, and follow wholly, and so allow the best part to lead among them 70c all. For the leaping of the heart in the expectation of danger and the arousal of spirit—since they knew in advance that all such swelling of the angered parts would come about through fire—they devised a relief: they implanted the lung, first soft and bloodless, and then with cavities inside pierced like a sponge's, so that, taking in breath and drink, 70d it would cool the heart and give it breathing space and ease in the heat. That is why they cut the channels of the windpipe to the lung, and set the lung around the heart like a cushion, so that when spirit was at its height in the heart, the heart would leap against something yielding and be cooled, and, laboring less, it could better serve reason along with spirit.

The part of the soul that desires food and drink, and all that it needs because of the body's nature, they settled 70e in the region between the midriff and the boundary at the navel, building in this whole region a kind of manger for the body's nourishment. There they tethered it like a wild beast, one that must nonetheless be kept and fed along with the rest if there was ever to be a mortal race. So they gave it its station there so that, always grazing at its manger and living as far as possible from the part that deliberates, and making as little uproar and noise as possible, it would let 71a the best part deliberate in peace about what benefits all, both together and individually. They knew that it would not understand reason, and that even if it did somehow get some perception of reasons, it would not be in its nature to care about any, but would be enthralled chiefly by images and phantoms, both by night and by day. The god, laying his plans against just this, constructed the form of the liver 71b and set it in that part's dwelling. He contrived it to be dense, smooth, bright and sweet, while also having bitterness, so that the power of thoughts coming from intelligence, as in a mirror that receives

impressions and gives back images to see, might frighten this part. That would happen whenever the power made use of the liver's kindred bitterness and came at it with harsh threats, quickly mixing the bitterness all through the liver so as to make bilious colors appear on it, and, contracting it, made it all wrinkled and rough, 71c bending and shriveling the lobe from its upright position and blocking and closing the reservoirs and gates, so as to cause pains and nausea. And again, whenever some breath of gentleness from thought painted opposite images, it would give respite from the bitterness, because it refused to stir or touch what is of a nature opposite to its own; and applying to the liver the sweetness innate in it, and straightening all its parts 71d to be upright, smooth and free, it would make the portion of the soul that dwells around the liver cheerful and serene, and able at night to pass its time moderately, practicing divination in sleep, since it had no share in reason and understanding. For those who put us together remembered their father's instruction, when he instructed them to make the mortal kind as good as they could. So, setting right even the lowly 71e part of us, so that it might somehow lay hold of truth, they established the seat of divination in it. And there is good evidence that the god gave divination to human unreason: no one in his right mind attains inspired and true divination, but only when the power of his understanding is fettered in sleep, or when he has been altered by illness or by some divine possession. It is for someone in his right mind to recall and ponder what was said, in dream or waking, by the prophetic and possessed nature, and to analyze by reason all the visions 72a that were seen—how they signify something, and to whom, whether some evil or good, future, past or present. But when someone has gone mad and still remains in that state, it is not his task to judge what he himself has seen and uttered; it has long been well said that only the sound-minded person can do and know his own business, and know himself. That is why it is the custom to appoint the class of interpreters as judges over 72b inspired divinations. Some call them diviners themselves, wholly

unaware that they are expounders of riddling utterance and vision, and not diviners at all; they would most rightly be called interpreters of those who divine.[31]

This, then, is why the liver has the nature we have described and is situated in the place we mentioned: for the sake of divination. While each creature is alive, such an organ gives clearer signs; once deprived of life it becomes blind, and its divinations too dim 72c to signify anything clearly. The structure and seat of the organ next to it, on the left, were made for the liver's sake, to keep it always bright and clean, like a cloth laid ready beside a mirror for wiping it. That is why, when impurities arise around the liver because of diseases of the body, the loose texture of the spleen cleanses them and takes them all in, since it is woven hollow and bloodless. 72d Filled with what is cleansed away, it grows large and festering; and again, when the body has been cleansed, it goes down and shrinks back to its former size.

As for the soul—how much of it is mortal and how much divine, and how, with what companions, and why these were housed apart—we could insist that the truth has been told only if a god agreed. But that what we have said is likely, we must venture to affirm, both now and still more on further reflection; so let it be affirmed. 72e What comes next must be pursued in the same way: this was how the rest of the body came about. It would be most fitting for it to have been constructed on reasoning like this.

THE HUMAN BODY

The gods build the belly, marrow, bone, flesh, sinew, skin, hair and nails.

TIMAEUS Those who were composing our kind knew the intemperance in food and drink that would be in us, and that through gluttony we would consume far more than the moderate and necessary amount. So, in order that swift destruction through

31 "Interpreters" renders *prophētai*, literally "those who speak for" another, the source of the English "prophet."

disease might not come about, and the mortal kind not come to an end at once, 73a incomplete, they foresaw this and set what is called the lower belly as a reservoir to hold the surplus drink and food, and coiled the intestines around it, so that the nourishment would not pass through quickly and compel the body quickly to need more. That would produce insatiability, and through gluttony make the whole race hostile to philosophy and to the Muses, and deaf to the most divine part within us. 73b

As for bones and flesh and everything of that sort, this is how it went. The starting point for all of them is the generation of marrow. For the bonds of life, by which the soul is bound to the body, were fastened in the marrow and rooted the mortal kind there. The marrow itself came from other things. Of the triangles, those that were primary, being straight and smooth, and most able to produce fire and water and air and earth with precision—these the god separated out, 73c each from its own kind, and mixed them with one another in due proportion, contriving a universal seed-stock for every mortal kind; and from them he fashioned the marrow. After that he planted the kinds of soul in it and bound them fast. And right from the first distribution he divided the marrow itself into shapes as many, and of such sorts, as each kind of soul was going to have. The part that was to hold the divine seed, like a field, he molded round in every direction and named this portion of the 73d marrow the brain, since, once each living being was complete, the vessel around it would become the head. The part that was to hold the remaining, mortal part of the soul he divided into shapes at once round and elongated, and called all of it marrow. From these, as if from anchors, he cast out the bonds of the whole soul and fashioned our whole body around them, first building a bony covering 73e all around the marrow. Bone he constructs like this. He sifted earth that was pure and smooth, kneaded it and moistened it with marrow. Then he puts it into fire, then dips it in water, then back into fire, and again into water; and by moving it many times like this from one to the other, he made it insoluble by either. Using this material, he turned a bony sphere around the

brain, leaving it a narrow outlet. [74a] And around the marrow of the neck and back he molded vertebrae out of it and set them beneath like pivots, starting from the head and running through the whole trunk. So, to keep all the seed safe, he fenced it in with a stony enclosure, putting joints in it, and using in them the power of the Different, set in the middle, for the sake of movement and bending. Again, he judged that the condition of bony substance [74b] was more brittle and inflexible than it should be, and that if it got fiery hot and then cooled again it would mortify and quickly destroy the seed inside it. For this reason he devised sinews and flesh. With the sinews he bound all the limbs together, so that by tightening and slackening around the pivots they would let the body bend and stretch. The flesh was to be a defense against heat and a shelter from winter, and against falls too, like felted goods, [74c] yielding softly and gently to bodies. And holding a warm moisture within itself, in summer it would sweat and, moistened on the outside, provide the whole body with a coolness of its own, while in winter, with this fire, it would in turn fend off in due measure the frost that assails and surrounds it from outside. With this in mind, our modeler in wax mixed and fitted together water, fire and earth, made a ferment out of acid and salt, [74d] mixed it in with them, and so constructed flesh, soft and full of sap. The nature of sinew he blended from a mixture of bone and unfermented flesh, a single substance intermediate in power between the two, and gave it a yellow color. That is why sinews acquired a power more taut and tenacious than flesh, but softer and moister than bone. With these the god wrapped the bones and marrow, binding them to one another with sinews, and then [74e] shaded them all over from above with flesh. The bones that had the most soul he enclosed in the least flesh, and those with the least soul inside in the most and densest flesh. At the junctions of the bones, where reason showed no necessity for it, he grew only a little flesh, so that it would neither get in the way of bending and make bodies hard to carry, since they would be hard to move; nor, by being abundant and dense and tightly packed together, produce insensitivity

through its solidity and make the parts concerned with thought more forgetful and duller. That is why the thighs and shins, 75a the region of the hips, the bones of the upper arms and forearms, and all our other bones that have no joints, and all the bones that are empty of understanding inside because there is little soul in their marrow—all these are filled out with flesh. The ones that have understanding have less—except where he made some flesh on its own for the sake of sensation, as with the tongue—but most of them are made in the way described. For the nature that comes into being by necessity 75b and grows up with us nowhere admits dense bone and much flesh together with keen sensation. The structure of the head would have had these above all, if they had been willing to coincide; and humankind, with a fleshy, sinewy, powerful head on its shoulders, would have won a life twice or many times as long, healthier and freer of pain than the one we have. As it was, the craftsmen of our birth weighed whether to make a longer-lived but 75c worse kind or a shorter-lived but better one, and agreed that a shorter, better life was by all means to be chosen by everyone over a longer, inferior one. That is why they covered the head with thin bone, but not with flesh and sinews, since it has no joints either. For all these reasons the head attached to every man's body is more sensitive and more intelligent, but far weaker. For these reasons and in this way 75d the god set the sinews at the base of the head, in a circle round the neck, and glued them there by their likeness; and he bound the ends of the jaws to them, beneath the face. The rest he scattered through all the limbs, joining joint to joint. The powers of our mouth—teeth, tongue and lips—were arranged by those who arranged them as they are now 75e for the sake of the necessary and the best: they devised the entrance for the sake of the necessary, and the exit for the sake of the best. For everything that comes in to give the body nourishment is necessary; but the stream of words that flows out and serves understanding is the most beautiful and best of all streams. Yet the head could not be left as bare bone, because of the extremes of the seasons in either direction, nor

could they let it become dull and insensitive, smothered by a crowd of flesh. So from the fleshy 76a substance, as it dried, a larger rind was left over and separated off—what is now called skin. Because of the moisture around the brain, this closed together on itself and, growing, wrapped the head round in a circle; and the moisture, rising under the sutures, watered it and closed it together at the crown, gathering it as if into a knot. The sutures have taken every kind of form because of the power of the revolutions and of nourishment: more of them where these fight each other more, 76b fewer where they fight less. All this skin the divine pricked all round with fire. When it was pierced and the moisture came out through it, whatever was pure liquid and heat departed, while the mixed part, made of the same things as the skin, was lifted by the motion and stretched out far, as fine as the puncture. Because of its slowness it was pushed back by the surrounding air outside, coiled back inside under the skin, 76c and took root. Through these processes hair has grown in the skin: it is akin to skin, being threadlike, but harder and denser through being felted by cold, as each hair, separated from the skin, was cooled and felted together. With this our maker made our head hairy, using the causes mentioned, but intending that it should serve instead of flesh as a covering for the 76d sake of the brain's safety: light, giving enough shade and shelter in summer and winter, and yet no hindrance to keen sensation. Where sinew, skin and bone are interwoven at the fingers, the mixture of the three dried out and became a single hard skin common to them all. It was crafted with these as auxiliary causes, but produced by the chief cause, intention, for the sake of what was to come. For those who were constructing us knew that one day women and the other 76e animals would come from men; and in particular they knew that many creatures would need nails for many purposes. So in human beings, right from their birth, they sketched out the growth of nails. On this reasoning and for these purposes they grew skin, hair and nails at the extremities of the limbs.

NOURISHMENT, BREATHING AND AGING

Plants are made as food, veins carry nourishment, breathing is explained, and aging and death follow.

TIMAEUS When all the parts and limbs of the mortal living being had grown [77a] together, and it turned out that by necessity it had to live its life in fire and air, and so was wasting away, melted and emptied by them, the gods devised help for it. They blended a nature akin to the human with other forms and senses, so as to make another living being, and planted it. These are the cultivated trees, plants and seeds, now trained by farming and tamed for our use. Before, there were only [77b] the wild kinds, which are older than the cultivated. Everything that shares in life can rightly and quite correctly be called a living being. And this being we are now speaking of shares in the third kind of soul, which our account placed between the midriff and the navel—the kind that has no share at all in opinion, reasoning or intelligence, but only in sensation, pleasant and painful, together with desires. For it is passive throughout; and its generation has not granted it by nature, turning within itself about itself, [77c] thrusting off motion from outside and using its own, to observe and reason about any of its own concerns. That is why it lives and is no different from a living being, but stays fixed and rooted in place, since it has been deprived of self-motion.

Having planted all these kinds as food for us, their inferiors, our superiors cut channels through our very body, as one cuts channels in gardens, so that it might be watered as if from an incoming stream. First, as hidden channels under [77d] the place where skin and flesh grow together, they cut two veins along the back, since the body happened to be double, with a right side and a left. These they ran down beside the spine, holding the generative marrow between them, so that it might flourish as much as possible, and so that the flow from there to the other parts, being downhill, might run easily and supply even watering. After this they split the veins around the head, wove them

through 77e each other in opposite directions, and let them go, bending some from the right toward the left of the body, and others from the left toward the right. This was so that, together with the skin, they might bind the head to the body, since it had no ring of sinews around it at the crown; and also so that sensations from either side might be made plain to the whole body. From there they went on to set up the irrigation in a way like this, 78a which we will see more easily if we first agree on the following. Everything made of smaller parts can hold in larger ones, but what is made of larger parts cannot hold in smaller. Fire has the smallest parts of all the kinds, which is why it passes through water, earth, air and everything made of them, and nothing can hold it in. We must think the same about our own belly: when food and drink fall into it, 78b it holds them in, but it cannot hold air and fire, since they have smaller parts than its own structure. These, then, the god used for watering the veins from the belly. He wove a network of air and fire like a fish trap, with a pair of funnels at the entrance, one of which he wove again into two branches; and from the funnels he stretched what were like cords all round, through the whole, to the outer edges of the network. 78c All the inside of the weave he made of fire, and the funnels and the vessel of air. Then he took it and placed it around the living being he had molded, in a way like this. One of the funnels he let into the mouth. Since this one was double, he let one branch down along the windpipe into the lung, and the other into the belly beside the windpipe. The other funnel he split, and let both parts out together through the channels of the nose, so that when the one by the mouth was not working, all its 78d streams too might be replenished from this one. The rest of the vessel of the trap he grew around the hollow parts of our body. And he made this whole thing at one time flow gently together into the funnels, since they were made of air, and at another time made the funnels flow back, while the network sank in through the body, since the body is porous, and out again; and the rays of fire bound up inside followed the air as it went either way. This, 78e as long as the mortal living being

holds together, never stops happening. To this kind of process, we say, the one who established names gave the names "inhalation" and "exhalation." All this action and experience has come about in our body so that it may be watered and cooled, and so be nourished and live. For whenever, as the breath goes in and out, the fire fastened inside follows it and, swinging continually back and forth, enters through the belly and takes hold of [79a] the food and drink, it melts them, divides them into small pieces, and carries them through the outlets by which it travels. It pumps them into the veins like water from a spring into channels, and so makes the streams of the veins flow through the body as through a conduit.

Let us look again at the process of respiration: what causes have made it what it is now. It goes like this. [79b] Since there is no void into which anything moving could enter, and breath moves out from us, what follows is by now clear to everyone: it does not go into a void, but pushes its neighbor from its seat. What is pushed always drives out its neighbor in turn, and by this necessity everything is driven round into the seat the breath left, enters there, fills it up, and follows the breath. All this happens at once, [79c] like a turning wheel, because there is no void. So the chest and the lung, as they let the breath out, are filled again by the air around the body, which sinks in through the porous flesh and is driven round. Then the air turns back and goes out through the body, and drives the breath round and in by the passage of the mouth and nostrils. The cause of their beginning we should take to be [79d] this. Every living being has its innermost parts, around the blood and veins, hottest, as though it had a spring of fire within it. This is what we likened to the network of the fish trap, saying that all of it stretched down the middle was woven of fire, and all the other, outer parts of air. We must agree that heat by nature goes outward to its own region, toward its kin. There are two outlets, one out through the body, the other [79e] through the mouth and nose. Whenever the heat rushes toward one, it pushes air round toward the other; what is pushed round falls into the fire and is warmed, while what goes

out is cooled. As the heat changes place, and the air at the other exit grows hotter, the hotter air in turn inclines that way, moving toward its own nature, and pushes round the air at the first exit. And so the air, always undergoing and returning the same effects, made into a circle swinging back and forth by both movements, produces inhalation and exhalation.

In the same way we should track down the causes of what happens with medical cupping vessels, [80a] of swallowing, and of projectiles, both those launched into the air and those that move along the ground; and of all the sounds that appear fast and slow, high and low—sometimes carried out of tune because the motion they produce in us is unlike, sometimes in concord because it is alike. For the slower sounds overtake the motions of the earlier, faster ones when these are already dying away and have come to be like them, [80b] and as they arrive later they set those motions moving. In overtaking them they do not throw them into confusion by imposing a different motion; instead, fitting the beginning of a slower movement to the faster one as it dies away, in likeness to it, they blend a single experience out of high and low. This gives pleasure to the foolish, and delight to the wise, through the imitation of divine harmony that comes about in mortal motions. So too all flowing of waters, and further [80c] the fall of thunderbolts, and the marvelous attraction of amber and of the Heraclean stones: in none of these is there ever any real pulling. Rather, there is no void, these things push one another round, and as they separate and combine they all exchange places, each going to its own seat. To anyone who investigates properly it will be evident that it is these processes, woven together, that work these wonders. [80d] [32]

So too respiration, where our account started, has come about in this way and through these means, as was said before. The fire cuts up the food and, swinging back and forth inside as it follows the breath, fills the veins from the belly as it swings, by pumping the cut-up pieces into them from there. That is how

32 The "Heraclean stones" are lodestones, natural magnets; amber, when rubbed, attracts light objects.

the streams of nourishment have come to flow in this way through the whole body in all living beings. Freshly cut, and from things akin to us—some from fruits, some from green plants, 80e which the god planted for us for this very purpose, to be food—these pieces take on all sorts of colors because of their mixing; but red is the color that runs through them most, a nature crafted by the cutting of fire and its imprint on something liquid. That is how what flows through the body got the color whose appearance we have described. We call it blood, the pasture of the flesh and of the whole body, 81a from which each part draws its water and fills up the place of what is being emptied. The manner of filling and emptying is like the way the motion of everything in the universe came about, by which every kind moves toward its own. The things that surround us outside are always melting us away and distributing what they send off, each to the kind of its own tribe. The particles in the blood, in turn, chopped up inside us and enclosed by the structure of each living being as if by a 81b heaven, are forced to imitate the motion of the universe. So each of the parts divided up inside moves toward its kin and fills again what has just been emptied. When more departs than flows in, the whole thing wastes away; when less, it grows. When the structure of the whole living being is young, with the triangles of its kinds still new, as though fresh off the stocks, it holds them locked together strongly, though its whole mass is compacted 81c soft, since it has only just come from marrow and been nourished on milk. So the triangles it takes in from outside, those that make up its food and drink, being older and weaker than its own, are overpowered and cut up by its new ones; and it makes the living being grow large, nourishing it from many like parts. But when the root of the triangles slackens because they have fought many battles against many opponents over a long time, 81d they can no longer cut up the incoming nourishment into their own likeness, and are themselves easily divided by what comes in from outside. Every living being, overpowered in this way, wastes away, and the condition is called old age. Finally, when the fitted

bonds of the triangles around the marrow no longer hold, pulled apart by the strain, they let go the bonds of the soul in turn; and the soul, released in a natural way, flies off with pleasure. 81e For everything contrary to nature is painful, while what happens as it naturally does is pleasant. Death too, in the same way: death that comes through disease or wounds is painful and violent, but death that comes with old age, going to its end according to nature, is the least troublesome of deaths, and happens with pleasure rather than pain.

DISEASES OF BODY AND SOUL

Diseases arise from disorder of the elements, tissues, air, phlegm and bile, and bodily states disturb the soul.

TIMAEUS Where diseases come from is clear, I think, to everyone. 82a There are four kinds from which the body is compacted—earth, fire, water and air. Their excess or deficiency contrary to nature, and their shift from their own place to a foreign one; and, since fire and the others happen to have more than one variety, each one's taking on a variety not suited to it; and all such things produce faction and disease. For when each of them comes about and shifts contrary to nature, what was cooled before is heated, 82b what was dry becomes moist later, and so with light and heavy, and they undergo every change in every way. For only when the same thing is added to or taken from the same thing, in the same respect, in the same way and in proportion, will it let the thing stay the same as itself, safe and healthy —so we maintain. Whatever goes astray in any of these, whether going out or coming in, will produce all kinds of alterations and endless diseases and destruction.

Now, since there are also secondary structures, composed according to nature, 82c there is a second way of understanding diseases for anyone who wants to consider them. Marrow, bone, flesh and sinew are compacted from those kinds, and blood too, in another way but from the same materials. Most other diseases come about as the ones before; but the gravest of them

turn out to be severe in this way: when the generation of these things runs in reverse, then they are destroyed. By nature, flesh and sinews come from blood: sinew from the fibers, because of their kinship, 82d and flesh from what congeals when it is separated from the fibers. What comes off the sinews and flesh in turn, sticky and oily, both glues the flesh to the substance of the bones and nourishes and increases the bone itself around the marrow. And the purest part, of the smoothest and oiliest triangles, strained through the density of the bones, trickles and drips from them and waters the 82e marrow. When each thing comes about in this way, health usually follows; disease, when the opposite happens. For when flesh melts and sends its liquefaction back into the veins, then the blood in the veins, mixed with air, becomes abundant and of every sort, varied in color and bitterness, and in acid and salty qualities too, and it contains biles, serums and phlegms of every kind. All these, having come about in reverse and been corrupted, first destroy the blood itself; and, no longer giving the body any 83a nourishment, they travel everywhere through the veins, no longer keeping the order of their natural cycles. They are hostile to each other, because they get no benefit from one another, and at war with whatever in the body holds together and stays at its post, destroying and melting it. Whatever part of the flesh is oldest when it melts becomes hard to digest and turns black from long burning; and because it is eaten through everywhere, 83b it is bitter, and falls harshly on any part of the body not yet corrupted. Sometimes the black color takes on acidity instead of bitterness, when the bitter has been further thinned out; sometimes the bitterness, dyed with blood, takes on a redder color, and when black is blended with this, a greenish one. And a yellow color is mixed in with the bitterness when new flesh is melted by the fire around the flame. The common name for all these is "bile," given either by some 83c physicians or by someone able to look at many unlike things and see in them a single kind that deserves a name for all. The other things called kinds of bile each got their own definition from their color. As for serum, the watery part of

blood is mild, but that of black and acid bile is savage, when it is mixed with a salty quality through heat; this is called acid phlegm. Again, there is what melts, together with air, out of new and tender flesh. When this is inflated [83d] and enclosed by moisture, bubbles form from this process, each invisible because of its smallness, but all together making a visible mass, with a color that looks white because of the foam that forms. All this liquefaction of tender flesh interwoven with air we call white phlegm. The watery part of newly formed phlegm is sweat and tears, [83e] and all the other such fluids the body pours out daily in cleansing itself. All these have become instruments of disease whenever blood is not replenished naturally from food and drink, but takes its bulk from the opposite sources, against the laws of nature. When each part of the flesh is broken down by disease but its foundations remain, the force of the misfortune is only half as great, since it can still recover easily. [84a] But when what binds flesh to bones becomes diseased, and no longer separates from the fibers and sinews to become nourishment for bone and a bond between flesh and bone, but instead of oily, smooth and sticky turns rough and salty, parched by bad diet, then all such matter, suffering this, crumbles away again beneath the flesh and sinews and parts from the bones. The flesh falls away with it from [84b] its roots, leaving the sinews bare and full of brine; and falling back into the stream of the blood, it makes the diseases already described more numerous. Grievous as these bodily afflictions are, those that come before them are graver still. This is when bone, because the flesh is too dense, does not get enough breathing space, and, heated by mold, becomes gangrenous; it does not take in its nourishment, [84c] but itself goes the opposite way into the nourishment, crumbling, while the nourishment goes into flesh, and flesh falls into blood, making all the diseases harsher than those before. The worst of all is when the substance of the marrow becomes diseased through some deficiency or excess. This produces the gravest diseases, and the most decisive for death, since the whole nature of the body is forced to flow in reverse.

A third kind of disease must be thought of as arising in three ways: 84d one from air, one from phlegm, one from bile. When the lung, the body's steward of air, does not keep its passages clear because it is blocked by rheums, the air cannot go in some places, while in others more of it goes in than it should. In the parts that get no cooling it causes rot; elsewhere it forces its way through the veins and twists them, melts the body, and is trapped in its middle, held there by the diaphragm. 84e From these causes countless painful diseases, often with heavy sweating, have been produced. Often, too, when flesh is broken down in the body, air forms inside and, unable to get out, causes the same agonies as air that has come in from outside. The worst are when it settles around the sinews and the small veins there, swells, and so strains backward the tendons and the sinews attached to them. From this very tension these diseases have been named tetanus and opisthotonus. Their cure is difficult: in fact, it is fevers coming on top of them 85a that mostly resolve them. White phlegm is dangerous when it is shut in, because of the air in its bubbles; when it has vents outside the body it is milder, but it mottles the body, breeding white patches, scaly spots and related diseases.[33] Mixed with black bile and dispersed over the revolutions in the head, which are the most divine, it throws them into confusion. When this comes in sleep it is milder, 85b but when it attacks people awake it is harder to be rid of. Since it is a disease of a sacred nature, it is most justly called sacred. Acid and salty phlegm is the source of all diseases that come from catarrh; and because the places it flows to are of every sort, these have taken every sort of name. All the parts of the body said to be inflamed, from their burning and blazing, are so because of bile.[34] When bile gets a vent outside, it boils and throws up all sorts of 85c tumors; shut in, it produces many burning diseases. The worst is when, blended with pure blood, it throws the fibers out of their proper order. These fibers were

33 Tetanus means "tension"; opisthotonus, "tension backward," a spasm that arches the body back.
34 The "sacred disease" is epilepsy.

scattered through the blood so that it might have a due proportion of thinness and thickness, and neither flow out of the porous body as a liquid because of heat, nor, being too dense and hard to move, 85d barely circulate in the veins. The fibers preserve the right balance of these by the way they naturally form. If one draws them together even in the blood of a dead creature, while it is cooling, all the rest of the blood becomes fluid; but left alone, together with the surrounding cold, they quickly congeal it. Since the fibers in blood have this power, bile—which by nature is old blood, and melted back into the blood from the flesh—when it falls in, hot and liquid, a little at first, congeals 85e because of the power of the fibers; and as it congeals and is forcibly quenched, it produces cold and shivering inside. When more of it flows in, it overpowers the fibers with its own heat and, boiling, shakes them into disorder. And if it becomes strong enough to overpower them to the end, it passes through to the marrow, burns it, and there loosens the soul's cables, as if from a ship, and sets it free. But when there is less of it, and the body holds out though it is melting, the bile itself is overpowered: either it is expelled all over the body, or it is driven through the veins into the lower or the upper belly, and, cast out 86a of the body like an exile from a city in civil strife, it produces diarrheas, dysenteries and all such diseases. A body sick chiefly from an excess of fire produces continuous heat and fevers; from air, daily fevers; from water, tertian fevers, because water is more sluggish than air and fire; from earth, the fourth and most sluggish of them, which is purged in periods four times as long, it produces quartan fevers and is rid of them only with difficulty. 86b 35

That is how diseases of the body come about; those of the soul, which arise from the condition of the body, come about like this. We must grant that disease of the soul is folly, and that there are two kinds of folly, madness and ignorance. So whatever condition someone suffers that involves either of

35 Tertian and quartan fevers recur every third and fourth day (counting inclusively), as in malaria.

these must be called a disease; and excessive pleasures and pains must be counted the greatest diseases of the soul. For a person who is overjoyed, or suffering the opposite through 86c pain, and rushing at the wrong moment to seize the one and escape the other, can neither see nor hear anything rightly, but is raving, and at that moment least able to share in reason. When someone's seed around the marrow becomes abundant and gushing, as though he were a tree that bears more fruit than is proportionate, he gets many pangs and many pleasures each time, in his desires and in what they bring forth, and is mad for most of his life because of these greatest pleasures 86d and pains. His soul is made sick and foolish by his body, yet he is regarded not as sick but as willingly bad. The truth is that sexual intemperance is, for the most part, a disease of the soul arising from the condition of one substance which, because of the porousness of the bones, floods the body and makes it wet. Indeed, almost everything that is called incontinence in pleasure, and blamed as if the bad were bad willingly, is blamed wrongly. For 86e no one is bad willingly. The bad person becomes bad through some faulty condition of the body and an uneducated upbringing, and these are hateful to everyone and come to them against their will. And again, as to pains, the soul in the same way acquires much badness through the body. For whenever acid and salty phlegms, and bitter and bilious humors, wander through someone's body and find no vent outside, but rolling around inside 87a mix their vapor with the motion of the soul and are blended with it, they implant all sorts of diseases of the soul, more intense and less, fewer and more numerous. Carried to the three regions of the soul, depending on which one each of them strikes, they produce every variety of bad temper and despondency, of rashness and cowardice, and of forgetfulness as well as slowness to learn. Besides this, when people so badly constituted 87b live under bad political systems, and bad speeches are made in their cities in private and in public, and moreover no studies that would cure these things are learned from youth—that is how all of us who are bad become bad, through two

causes wholly against our will. For this we must always blame the planters more than the planted, and the nurturers more than the nurtured. Still, one must strive, as far as one can, through upbringing, pursuits and studies, to escape badness and lay hold of its opposite. But that is a different kind of discussion. 87c

CARE OF THE SOUL

Health requires proportion between soul and body, exercise of both, and study of the heavens.

TIMAEUS The counterpart to this—how bodies and minds are cared for, and the causes that preserve them—it is likely and fitting to give its due in turn; for it is more just to spend our account on good things than on bad. Everything good is beautiful, and the beautiful is not without measure; so a living being that is to be such must be taken to be well proportioned. Of proportions, the small ones we perceive and reckon up; but the most decisive and greatest 87d we leave unreckoned. For with respect to health and disease, excellence and badness, no proportion or disproportion is greater than that of the soul itself to the body itself. Yet we neither examine nor even notice that when a weaker and lesser frame carries a soul that is strong and great in every way, or when the two are joined the other way around, the living being as a whole is not beautiful, since it lacks proportion in the greatest proportions; whereas one in the opposite condition is, for anyone able to see it, the most beautiful and lovable of all sights. 87e Think of a body with legs too long, or with some other disproportion within itself. It is ugly, and also, when it shares in labor, it causes much fatigue, many sprains and, by its lurching, falls, and so is the cause of countless troubles for itself. We must think the same about the combination of the two, which we call the living being. When the soul in it is stronger 88a than the body and passionate, it shakes the whole body from within and fills it with diseases; when it throws itself intensely into some learning and inquiry, it wastes

the body away; and when it teaches and fights battles in words, in public and in private, through the rivalries and contentiousness that arise, it heats the body up and shakes it, bringing on rheums—and so deceives most of the so-called physicians, and makes them blame the wrong causes; and when, again, a body that is large and too big for its soul is joined with a small and weak mind, [88b] then, since there are by nature two sets of desires in human beings—for food, because of the body, and for understanding, because of the most divine part in us—the motions of the stronger part prevail and increase their own; and by making the part that belongs to the soul dull, slow to learn and forgetful, they produce in it the greatest disease, ignorance. There is one safeguard against both: to move neither the soul without the body nor the body without the soul, so that each may hold its own, and they may become balanced and [88c] healthy. So the mathematician, or anyone else who works intensely at some study with his mind, must also give the body its motion by taking part in physical training; and the person who carefully molds his body must in turn give the soul its motions by making use of music and all of philosophy, if he is to be rightly called both beautiful and good. The parts, too, must be cared for in the same way, imitating [88d] the form of the universe. For the body is heated and cooled inside by what enters it, and again dried and moistened by what is outside, and undergoes what follows from these, under both kinds of motion. When someone hands over a body at rest to these motions, it is overpowered and destroyed. But if one imitates what we called the nurse and foster-mother of the universe, and as far as possible never lets the body rest, but moves it, and by always producing shakings in it [88e] throughout, fends off the motions inside and out in accordance with nature; and if, by shaking it moderately, he sets the affections and particles that wander about the body in order with one another according to their kinships, as in the earlier account we gave of the universe—then he will not let enemy set beside enemy breed wars and diseases in the body, but will have friend set beside friend, [89a] producing health. Of motions, the best is

the one produced in oneself by oneself, since it is most akin to the motion of thought and of the universe; motion produced by something else is worse; and worst is the kind that moves the body part by part, through other agents, while it lies at rest. That is why, of the ways of purging and restoring the body, the best is through gymnastic exercise; second, through being rocked, as on voyages or whenever one is carried along without fatigue; and a third kind of motion, [89b] useful to someone under great constraint, but otherwise not to be accepted by anyone with sense, is the medical kind, purging by drugs. Diseases that involve no great danger should not be provoked with drugs. For every structure of disease is in a way like the nature of living beings. Their constitution has fixed periods of life, both for the kind as a whole and for each living being by itself, which is born with an allotted lifespan, [89c] apart from the accidents that come by necessity. For the triangles of each are constructed from the very beginning with a power able to last up to a certain time, beyond which no one could ever go on living. It is the same with the structure of diseases: whenever someone destroys it with drugs before its allotted time, small diseases tend to become great and few to become many. That is why one should guide all such things by regimen, so far as one has leisure, [89d] and not provoke a troublesome evil by drugging it.

About the composite living being and its bodily part, and how, both guiding and being guided by himself, one would best live according to reason, let this be what we say. But what is to do the guiding must surely be prepared even more, and first, to be as beautiful and good as possible for the task. To go through this with precision [89e] would be a sufficient work in itself; but taking it as a side matter, following what came before, one might not be out of place to consider it as follows and so bring the account to its end. As we have often said, three kinds of soul are housed in us in three places, and each happens to have its own motions. So now, in the same way, and as briefly as possible, we must say that the one that lives in idleness and keeps its motions at rest must become weakest, and the one that exercises,

strongest. 90a So we must take care that they have their motions in proportion to one another. As for the most authoritative kind of soul in us, we must think of it like this. The god has given it to each of us as a guardian spirit—the part we say dwells at the top of our body, and raises us from earth toward our kin in heaven, since we are a plant not of earth but of heaven. And we are quite right to say so: for from there, where the soul first came into being, the divine suspends our head, which is our root, 90b and so keeps the whole body upright.[36] So when someone has given himself over to appetites or rivalries and labors hard at them, all his beliefs must become mortal, and as far as it is possible to become mortal, he cannot fall short of it in the least, since it is that part he has fostered. But when someone has been serious about love of learning and true understanding, and has exercised this above all his capacities, 90c he must surely think immortal and divine thoughts, if he lays hold of the truth; and so far as human nature can share in immortality, he cannot leave any part of it behind. And since he is always caring for the divine, and keeps the guardian spirit that lives with him well ordered, he must be happy above all others. There is one way of caring for anything: to give each part its own nourishment and motions. The motions akin to the divine in us are the thoughts and revolutions of the universe. 90d These each of us must follow, correcting the revolutions in our head that were corrupted at our birth by learning the harmonies and revolutions of the universe. We must make what thinks like what it thinks about, in accordance with its original nature; and having made it like, we must attain the goal of the best life set before human beings by the gods, for the present and for the time to come. 90e

36 "Guardian spirit" renders *daimōn*; the word returns below in *eudaimōn*, "happy," literally "having a good *daimōn*."

WOMEN AND THE OTHER ANIMALS

Cowardly and foolish men are reborn as women, birds, land animals and creatures of the water.

TIMAEUS And now the task set us at the start, to go through the universe up to the birth of human beings, seems nearly complete. How the other animals came about must be mentioned briefly, since there is no need to be long; that way one would seem to oneself more measured in speaking of them. So let it be told as follows. Of the men who came into being, those who were cowardly and lived their lives unjustly were, according to the likely account, reborn as women in their second [91a] birth. And for this reason, at that time, the gods fashioned the desire for sexual union, constructing one living creature with a soul in us, and another in women, making each in the following way. The passage for drink, through which liquid passes by way of the lung, under the kidneys, into the bladder, which receives it and expels it under the pressure of air, they bored through into the marrow that runs compacted from the head down the neck and through the spine, [91b] which in our earlier discussion we called seed. This marrow, being alive with soul and having found a vent, implanted a vital desire for emission at the very place where it found its vent, and so produced the love of begetting. That is why in men the genitals are by nature disobedient and self-willed, like a creature that will not listen to reason, and in their frenzied desires try to master everything. In [91c] women, again, for these same reasons, what is called the womb or uterus is a living creature inside them that desires childbearing. When it stays without fruit long past its season, it is distressed and resentful, and wandering all over the body, blocking the passages of breath and not allowing breathing, it drives the woman into the most extreme distress and causes all sorts of other diseases. This lasts until the desire and love of the two bring them [91d] together. Then, as if plucking fruit from trees, they sow in the womb, as in a field, living creatures too small to see and still

unformed; and, distinguishing their parts again, they nurture them inside until they are large, and then bring them out into the light and complete the birth of the living being. That is how women and the whole female sex came into being. The tribe of birds was refashioned, growing feathers instead of hair, out of men who were harmless but light-minded—men who studied what is up in the sky, but in their simplicity thought that the surest proofs about such things come through [91e] sight. The wild kind that walks on land came from men who made no use of philosophy and gave no thought to the nature of the heavens, because they no longer used the revolutions in their heads, but followed as their leaders the parts of the soul in the chest. Because of these practices they rested their forelimbs and heads on the ground, drawn there by kinship, and had elongated crowns of every shape, [92a] depending on how each one's revolutions had been squeezed together through idleness. This is why their kind was born four-footed and many-footed: the god set more supports under the more foolish, so that they would be drawn more toward the earth. And the most foolish of these, whose whole bodies stretched entirely toward the earth, since there was no longer any need for feet, they made footless, wriggling along the ground. The [92b] fourth kind, which lives in water, came from the most senseless and ignorant of all. Those who were refashioning them judged them unworthy even of pure breath, since their souls were impure with every kind of wrong; instead of breathing air, fine and pure, they thrust them into breathing water, murky and deep. That is where the race of fish came from, and of shellfish, and of everything that lives in water: as the penalty for their utmost ignorance, they have been allotted the utmost dwellings. [92c] And by these principles, then and now, living beings change into one another, transformed as they lose or gain intelligence and folly.

And so we may say that our account of the universe has now reached its end. For this cosmos, having received mortal and immortal living beings and been filled with them in this way, has come to be a visible living being containing the visible

things, a perceptible god, the image of the intelligible: greatest and best, most beautiful and most perfect—this one heaven, the only one of its kind.