

19.8 | *The Universe or Cosmos*

Many of the questions that have appeared in earlier sections of this chapter, especially the sections on cause, motion and change, space, and time, reappear here in the form of questions about the beginning and end of the world, its infinity or boundlessness, and its creation or origin. Similarly, the question raised in the section on nature, about God's immanence in nature or his transcendence of it, recurs here as a question about the relation of God to the universe or cosmos.

New questions do appear here. Is there only one universe or is there a multiplicity of worlds, even an infinity of them? Is this the best of all possible worlds, in which everything that happens has a sufficient reason? The affirmative answer, as given by Leibniz, has always been taken as the hallmark of philosophical optimism. It is opposed on rational grounds by Aquinas, who argues that a better world than this is possible; and it is laughed out of court by the ridicule that Voltaire heaps upon it. Related questions are discussed by others: wheth-

er the universe is intrinsically rational or intelligible, and whether God's creation of the world was an act of free choice on his part or something entirely necessitated.

Another point of dispute is the conception of a world-soul—an indwelling principle animating the universe and giving it intelligent direction. This conception, proposed by philosophers in antiquity, is rejected by later Christian theologians.

It is generally agreed that cosmos is the opposite of chaos; even those who conceive the universe as resulting from a fortuitous concourse of atoms find order in its structure and its processes. But the extent and character of its order are disputed. As opposed to the vision of a universe that is a thoroughly integrated whole, in which there are no loose ends or independent threads, William James proposed what he calls a "pluralistic universe," one in which there are many loosely concatenated strands, operating with some degree of independence of one another.

1 In the beginning God created the heaven and the earth.

And the earth was without form, and void; and darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters.

And God said, Let there be light: and there was light.

And God saw the light, that it was good: and God divided the light from the darkness.

And God called the light Day, and the darkness he called Night. And the evening and the morning were the first day.

Genesis 1:1-5

2 The earth is the Lord's, and the fulness thereof; the world, and they that dwell therein.

Psalms 24:1

3 One generation passeth away, and another generation cometh; but the earth abideth for ever.

Ecclesiastes 1:4

4 *Timaeus*. Let me tell you . . . why the creator made this world of generation. He was good, and the good can never have any jealousy of anything. And being free from jealousy, he desired that all things should be as like himself as they could be. This is in the truest sense the origin of creation and of the world, as we shall do well in believing on the testimony of wise men: God desired that all things should be good and nothing bad, so far as this was attainable. Wherefore also finding the whole visible sphere not at rest, but moving in an irregular and disorderly fashion, out of disorder he brought order, considering that this was in ev-

ery way better than the other. Now the deeds of the best could never be or have been other than the fairest; and the creator, reflecting on the things which are by nature visible, found that no unintelligent creature taken as a whole was fairer than the intelligent taken as a whole; and that intelligence could not be present in anything which was devoid of soul. For which reason, when he was framing the universe, he put intelligence in soul, and soul in body, that he might be the creator of a work which was by nature fairest and best. Wherefore, using the language of probability, we may say that the world became a living creature truly endowed with soul and intelligence by the providence of God.

This being supposed, let us proceed to the next stage: In the likeness of what animal did the Creator make the world? It would be an unworthy thing to liken it to any nature which exists as a part only; for nothing can be beautiful which is like any imperfect thing; but let us suppose the world to be the very image of that whole of which all other animals both individually and in their tribes are portions. For the original of the universe contains in itself all intelligible beings, just as this world comprehends us and all other visible creatures. For the Deity, intending to make this world like the fairest and most perfect of intelligible beings, framed one visible animal comprehending within itself all other animals of a kindred nature. Are we right in saying that there is one world, or that they are many and infinite? There must be one only, if the created copy is to accord with the original. For that which includes all other intelligible creatures cannot have a second or companion; in that case there would be need of another living being which would include both, and of which they would be parts, and the likeness would be more truly said to resemble not them, but that other which included them. In order then that the world might be solitary, like the perfect animal, the creator made not two worlds or an infinite number of them; but there is and ever will be one only-begotten and created heaven.

Plato, *Timaeus*, 29B

- 5 *Timaeus*. And he [the Creator] gave to the world the figure which was suitable and also natural. Now to the animal which was to comprehend all animals, that figure was suitable which comprehends within itself all other figures. Wherefore he made the world in the form of a globe, round as from a lathe, having its extremes in every direction equidistant from the centre, the most perfect and the most like itself of all figures; for he considered that the like is infinitely fairer than the unlike. This he finished off, making the surface smooth all around for many reasons; in the first place, because the living being had no need of eyes when there was nothing remaining outside him to be seen; nor of ears when there was nothing

to be heard; and there was no surrounding atmosphere to be breathed; nor would there have been any use of organs by the help of which he might receive his food or get rid of what he had already digested, since there was nothing which went from him or came into him: for there was nothing beside him. Of design he was created thus, his own waste providing his own food, and all that he did or suffered taking place in and by himself. For the Creator conceived that a being which was self-sufficient would be far more excellent than one which lacked anything; and, as he had no need to take anything or defend himself against any one, the Creator did not think it necessary to bestow upon him hands: nor had he any need of feet, nor of the whole apparatus of walking; but the movement suited to his spherical form was assigned to him, being of all the seven that which is most appropriate to mind and intelligence; and he was made to move in the same manner and on the same spot, within his own limits revolving in a circle. All the other six motions were taken away from him, and he was made not to partake of their deviations. And as this circular movement required no feet, the universe was created without legs and without feet.

Plato, *Timaeus*, 33A

- 6 *Timaeus*. When all things were in disorder God created in each thing in relation to itself, and in all things in relation to each other, all the measures and harmonies which they could possibly receive. For in those days nothing had any proportion except by accident; nor did any of the things which now have names deserve to be named at all—as, for example, fire, water, and the rest of the elements. All these the creator first set in order, and out of them he constructed the universe, which was a single animal comprehending in itself all other animals, mortal and immortal. Now of the divine, he himself was the creator, but the creation of the mortal he committed to his offspring. And they, imitating him, received from him the immortal principle of the soul; and around this they proceeded to fashion a mortal body, and made it to be the vehicle of the soul, and constructed within the body a soul of another nature which was mortal, subject to terrible and irresistible affections—first of all, pleasure, the greatest incitement to evil; then, pain, which deters from good; also rashness and fear, two foolish counsellors, anger hard to be appeased, and hope easily led astray—these they mingled with irrational sense and with all-daring love according to necessary laws, and so framed man.

Plato, *Timaeus*, 69A

- 7 It is evident not only that there is not, but also that there could never come to be, any bodily mass whatever outside the circumference. The world as a whole, therefore, includes *all* its appropriate matter, which is, as we saw, natural percep-

tible body. So that neither are there now, nor have there ever been; nor can there ever be formed more heavens than one, but this heaven of ours is one and unique and complete.

Aristotle, *On the Heavens*, 279a7

- 8 Everything which has a function exists for its function. The activity of God is immortality, i.e. eternal life. Therefore the movement of that which is divine must be eternal. But such is the heaven, viz. a divine body, and for that reason to it is given the circular body whose nature it is to move always in a circle. Why, then, is not the whole body of the heaven of the same character as that part? Because there must be something at rest at the centre of the revolving body; and of that body no part can be at rest, either elsewhere or at the centre. It could do so only if the body's natural movement were towards the centre. But the circular movement is natural, since otherwise it could not be eternal: for nothing unnatural is eternal. The unnatural is subsequent to the natural, being a derangement of the natural which occurs in the course of its generation. Earth then has to exist; for it is earth which is at rest at the centre.

Aristotle, *On the Heavens*, 286a9

- 9 The sun and the stars and the whole heaven are ever active, and there is no fear that they may sometime stand still, as the natural philosophers fear they may. Nor do they tire in this activity; for movement is not for them, as it is for perishable things, connected with the potentiality for opposites, so that the continuity of the movement should be laborious; for it is that kind of substance which is matter and potency, not actuality, that causes this.

Aristotle, *Metaphysics*, 1050b23

- 10 There are infinite worlds both like and unlike this world of ours. For the atoms being infinite in number, as was proved already, are borne on far out into space. For those atoms, which are of such nature that a world could be created out of them or made by them, have not been used up either on one world or on a limited number of worlds, nor again on all the worlds which are alike, or on those which are different from these. So that there nowhere exists an obstacle to the infinite number of the worlds.

Epicurus, *Letter to Herodotus*

- 11 We must believe that worlds, and indeed every limited compound body which continuously exhibits a similar appearance to the things we see, were created from the infinite, and that all such things, greater and less alike, were separated off from individual agglomerations of matter; and that all are again dissolved, some more quickly, some more slowly, some suffering from one set of causes, others from another. And further we must

believe that these worlds were neither created all of necessity with one configuration nor yet with every kind of shape. Furthermore, we must believe that in all worlds there are living creatures and plants and other things we see in this world; for indeed no one could prove that in a world of one kind there might or might not have been included the kinds of seeds from which living things and plants and all the rest of the things we see are composed, and that in a world of another kind they could not have been.

Epicurus, *Letter to Herodotus*

- 12 There are some . . . who think that the number of the sand is infinite in multitude; and I mean by the sand not only that which exists about Syracuse and the rest of Sicily but also that which is found in every region whether inhabited or uninhabited. Again there are some who, without regarding it as infinite, yet think that no number has been named which is great enough to exceed its multitude. And it is clear that they who hold this view, if they imagined a mass made up of sand in other respects as large as the mass of the earth, including in it all the seas and the hollows of the earth filled up to a height equal to that of the highest of the mountains, would be many times further still from recognising that any number could be expressed which exceeded the multitude of the sand so taken. But I will try to show you by means of geometrical proofs, which you will be able to follow, that, of the numbers named by me and given in the work which I sent to Zeuxippus, some exceed not only the number of the mass of sand equal in magnitude to the earth filled up in the way described, but also that of a mass equal in magnitude to the universe.

Archimedes, *Sand-Reckoner*

- 13 Be far from believing this, that all things as they say press to the centre of the sun, and that for this reason the nature of the world stands fast without any strokes from the outside and the uppermost and lowest parts cannot part asunder in any direction, because all things have been always pressing towards the centre. . . . Groundless error has devised such dreams for fools, because they have embraced false principles of reason. For there can be no centre where the universe is infinite; no nor, even if there were a centre, could anything take up a position there any more on that account than for some quite different reason be driven away. For all room and space, which we term void, must through centre, through no-centre alike give place to heavy bodies, in whatever directions their motions tend. Nor is there any spot of such a sort that when bodies have reached it, they can lose their force of gravity and stand upon void; and that again which is void must not serve to support anything, but must, as its nature craves, continually give place. Things cannot

therefore in such a way be held in union, o'er-mastered by love of a centre.

Lucretius, *Nature of Things*, I

- 14 Since the body of the earth and water and the light breath of air and burning heats, out of which this sum of things is seen to be formed, do all consist of a body that had a birth and is mortal, the whole nature of the world must be reckoned of a like body. For those things whose parts and members we see to be of a body that had a birth and of forms that are mortal, we perceive to be likewise without exception mortal, and at the same time to have had a birth. Since therefore I see that the chiefest members and parts of the world are destroyed and begotten anew, I may be sure that for heaven and earth as well there has been a time of beginning and there will be a time of destruction.

Lucretius, *Nature of Things*, V

- 15 Whether the world is a soul, or a body under the government of nature, like trees and crops, it embraces in its constitution all that it is destined to experience actively or passively from its beginning right on to its end; it resembles a human being, all whose capacities are wrapped up in the embryo before birth. Ere the child has seen the light the principle of beard and grey hairs is innate. Albeit small and hidden, all the features of the whole body and of every succeeding period of life are there. In like manner the creation of the world embraces sun and moon, stars with their successive phases, and the birth of all sentient life; and no less the methods of change in all earthly things.

Seneca, *Quaestiones Naturales*, III, 29

- 16 Before there was any earth or sea, before the canopy of heaven stretched overhead, Nature presented the same aspect the world over, that to which men have given the name of Chaos. This was a shapeless uncoordinated mass, nothing but a weight of lifeless matter, whose ill-assorted elements were indiscriminately heaped together in one place. There was no sun, in those days, to provide the world with light, no crescent moon ever filling out her horns: the earth was not poised in the enveloping air, balanced there by its own weight, nor did the sea stretch out its arms along the margins of the shores. Although the elements of land and air and sea were there, the earth had no firmness, the water no fluidity, there was no brightness in the sky. Nothing had any lasting shape, but everything got in the way of everything else; for, within that one body, cold warred with hot, moist with dry, soft with hard, and light with heavy.

This strife was finally resolved by a god, a natural force of a higher kind, who separated the earth from heaven, and the waters from the earth, and set the clear air apart from the cloudy atmosphere. When he had freed these elements, sorting

them out from the heap where they had lain, indistinguishable from one another, he bound them fast, each in its separate place, forming a harmonious union. The fiery aether, which has no weight, formed the vault of heaven, flashing upwards to take its place in the highest sphere. The air, next to it in lightness, occupied the neighbouring regions. Earth, heavier than these, attracted to itself the grosser elements, and sank down under its own weight, while the encircling sea took possession of the last place of all, and held the solid earth in its embrace. In this way the god, whichever of the gods it was, set the chaotic mass in order, and, after dividing it up, arranged it in its constituent parts.

Ovid, *Metamorphoses*, I

- 17 In the beginning was the Word, and the Word was with God, and the Word was God.

The same was in the beginning with God.

All things were made by him; and without him was not any thing made that was made.

John 1:1-3

- 18 And when the seven thunders had uttered their voices, I was about to write: and I heard a voice from heaven saying unto me, Seal up those things which the seven thunders uttered, and write them not.

And the angel which I saw stand upon the sea and upon the earth lifted up his hand to heaven,

And swore by him that liveth for ever and ever, who created heaven, and the things that therein are, and the earth, and the things that therein are, and the sea, and the things which are therein, that there should be time no longer:

But in the days of the voice of the seventh angel, when he shall begin to sound, the mystery of God should be finished, as he hath declared to his servants the prophets.

Revelation 10:4-7

- 19 And he saith unto me, Seal not the sayings of the prophecy of this book: for the time is at hand.

He that is unjust, let him be unjust still: and he which is filthy, let him be filthy still: and he that is righteous, let him be righteous still: and he that is holy, let him be holy still.

And, behold, I come quickly; and my reward is with me, to give every man according as his work shall be.

I am Alpha and Omega, the beginning and the end, the first and the last.

Blessed are they that do his commandments, that they may have right to the tree of life, and may enter in through the gates into the city.

For without are dogs, and sorcerers, and whoremongers, and murderers, and idolaters, and whosoever loveth and maketh a lie.

I Jesus have sent mine angel to testify unto you these things in the churches. I am the root and the

offspring of David, and the bright and morning star.

And the Spirit and the bride say, Come. And let him that heareth say, Come. And let him that is athirst come. And whosoever will, let him take the water of life freely.

For I testify unto every man that heareth the words of the prophecy of this book, If any man shall add unto these things, God shall add unto him the plagues that are written in this book:

And if any man shall take away from the words of the book of this prophecy, God shall take away his part out of the book of life, and out of the holy city, and from the things which are written in this book.

He which testifieth these things saith, Surely I come quickly. Amen. Even so, come, Lord Jesus.

Revelation 22:10-20

- 20 All that has by nature with systematic method been arranged in the universe seems both in part and as a whole to have been determined and ordered in accordance with number, by the forethought and the mind of him that created all things; for the pattern was fixed, like a preliminary sketch, by the domination of number pre-existent in the mind of the world-creating God, number conceptual only and immaterial in every way, but at the same time the true and the eternal essence, so that with reference to it, as to an artistic plan, should be created all these things, time, motion, the heavens, the stars, all sorts of revolutions.

Nicomachus, *Arithmetic*, I, 6

- 21 Either it is a well-arranged universe or a chaos huddled together, but still a universe. But can a certain order subsist in thee, and disorder in the All?

Marcus Aurelius, *Meditations*, IV, 27

- 22 The universe is either a confusion, and a mutual involution of things, and a dispersion; or it is unity and order and providence. If then it is the former, why do I desire to tarry in a fortuitous combination of things and such a disorder? And why do I care about anything else than how I shall at last become earth? . . . But if the other supposition is true, I venerate, and I am firm, and I trust in him who governs.

Marcus Aurelius, *Meditations*, VI, 10

- 23 We hold that the ordered universe, in its material mass, has existed for ever and will for ever endure.

Plotinus, *Second Ennead*, I, 1

- 24 Where there is motion within but not outwards and the total remains unchanged, there is neither growth nor decline, and thus the Kosmos never ages.

Plotinus, *Second Ennead*, I, 3

- 25 The administration of the universe entails neither labour nor loss.

Plotinus, *Second Ennead*, I, 4

- 26 We cannot but recognize from what we observe in this universe that some such principle of order prevails throughout the entire of existence—the minutest of things a tributary to the vast total; the marvellous art shown not merely in the mightiest works and sublimest members of the All, but even amid such littleness as one would think Providence must disdain: the varied workmanship of wonder in any and every animal form; the world of vegetation, too; the grace of fruits and even of leaves, the lavishness, the delicacy, the diversity of exquisite bloom; and all this not issuing once, and then to die out, but made ever and ever anew as the Transcendent Beings move variously over this earth.

Plotinus, *Third Ennead*, II, 13

- 27 If You fill heaven and earth, do they contain You? Or do You fill them, and yet have much over since they cannot contain You? Is there some other place into which that overplus of You pours that heaven and earth cannot hold? Surely You have no need of any place to contain You since You contain all things, and fill them indeed precisely by containing them. The vessels thus filled with You do not render You any support: for though they perished utterly, You would not be spilt out. And in pouring Yourself out upon us, You do not come down to us but rather elevate us to You: You are not scattered over us, but we are gathered into one by You. You fill all things: but with Your whole being? It is true that all things cannot wholly contain You: but does this mean that they contain part of You? and do they all contain the same part at the same time? or do different parts of creation contain different parts of You—greater parts or smaller according to their own magnitude? But are there in You parts greater and smaller? Or are You not in every place at once in the totality of Your being, while yet nothing contains You wholly?

Augustine, *Confessions*, I, 3

- 28 How, O God, did You create heaven and earth? Obviously it was not *in* heaven or on earth that You made heaven and earth; nor in the air nor in the waters, since these belong to heaven and earth; nor did You make the universe in the universe, because there was no place for it to be made in until it was made. Nor had You any material in Your hand when You were making heaven and earth: for where should You have got what You had not yet made to use as material? What exists, save because You exist? You spoke and heaven and earth were created; in Your word You created them.

Augustine, *Confessions*, XI, 5

29 Thus Lord, You who do not change as things and circumstances change but are the Self-same, and the Self-same and the Self-same, Holy, Holy, Holy, Lord God Almighty—You, Lord, in the Beginning, which is from You, in Your wisdom, which is born of Your substance, made something and made it of nothing.

You created *heaven and earth*, but not of Your own substance: for in that event they would have been equal to Your only-begotten Son and hence to Yourself; and it would have been altogether unjust that something not proceeding from You should be equal to You. But, apart from You there was no other thing existent to make them of, O God, Trinity that is One, Unity that is Three. Therefore it was of nothing that You made heaven and earth, the great thing and the small thing: for You are almighty and good and must make all things good, the great heaven and the small earth. You were and nothing else was, and of nothing You made *heaven [the heaven of heaven] and earth*, these two, one close to You, the other close to nothing, one than which You alone are higher, the other than which nothing is lower.

Augustine, *Confessions*, XII, 7

30 If God is the soul of the world, and the world is as a body to Him, who is the soul, He must be one living being consisting of soul and body, and . . . this same God is a kind of womb of nature containing all things in Himself, so that the lives and souls of all living things are taken, according to the manner of each one's birth, out of His soul which vivifies that whole mass, and therefore nothing at all remains which is not a part of God. And if this is so, who cannot see what impious and irreligious consequences follow such as that whatever one may trample, he must trample a part of God, and in slaying any living creature, a part of God must be slaughtered? But I am unwilling to utter all that may occur to those who think of it, yet cannot be spoken without irreverence.

Augustine, *City of God*, IV, 12

31 There are some . . . who, though they do not suppose that this world is eternal, are of opinion either that this is not the only world, but that there are numberless worlds, or that indeed it is the only one, but that it dies, and is born again at fixed intervals, and this times without number; but they must acknowledge that the human race existed before there were other men to beget them. For they cannot suppose that, if the whole world perish, some men would be left alive in the world, as they might survive in floods and conflagrations, which those other speculators suppose to be partial, and from which they can therefore reasonably argue that a few men survived whose posterity would renew the population; but as they believe that the world itself is renewed out of its own material, so they must believe that out of its

elements the human race was produced, and then that the progeny of mortals sprang like that of other animals from their parents.

Augustine, *City of God*, XII, 11

32 As to those who are always asking why man was not created during these countless ages of the infinitely extended past, and came into being so lately that, according to Scripture, less than 6000 years have elapsed since He began to be, I would reply to them regarding the creation of man, just as I replied regarding the origin of the world to those who will not believe that it is not eternal, but had a beginning, which even Plato himself most plainly declares, though some think his statement was not consistent with his real opinion. If it offends them that the time that has elapsed since the creation of man is so short, and his years so few according to our authorities, let them take this into consideration, that nothing that has a limit is long, and that all the ages of time being finite, are very little, or indeed nothing at all, when compared to the interminable eternity. Consequently, if there had elapsed since the creation of man, I do not say five or six, but even sixty or six hundred thousand years, or sixty times as many, or six hundred or six hundred thousand times as many, or this sum multiplied until it could no longer be expressed in numbers, the same question could still be put, "Why was he not made before?" For the past and boundless eternity during which God abstained from creating man is so great that, compare it with what vast and untold number of ages you please, so long as there is a definite conclusion of this term of time, it is not even as if you compared the minutest drop of water with the ocean that everywhere flows around the globe. For of these two, one indeed is very small, the other incomparably vast, yet both are finite; but that space of time which starts from some beginning, and is limited by some termination, be it of what extent it may, if you compare it with that which has no beginning, I know not whether to say we should count it the very minutest thing, or nothing at all.

Augustine, *City of God*, XII, 12

33 In vain . . . do we attempt to compute definitely the years that may remain to this world, when we may hear from the mouth of the Truth that it is not for us to know this. Yet some have said that four hundred, some five hundred, others a thousand years, may be completed from the ascension of the Lord up to His final coming. But to point out how each of them supports his own opinion would take too long, and is not necessary; for indeed they use human conjectures, and bring forward nothing certain from the authority of the canonical Scriptures. But on this subject He puts aside the figures of the calculators, and orders silence, Who says, "It is not for you to know the

times, which the Father hath put in His own power.”

Augustine, *City of God*, XVIII, 53

- 34 As . . . the world was not made by chance, but by God acting by His intellect . . . there must exist in the divine mind a form to the likeness of which the world was made.

Aquinas, *Summa Theologica*, I, 15, 1

- 35 The universe, the things that exist now being supposed, cannot be better, on account of the most noble order given to these things by God, in which the good of the universe consists. For if any one thing were bettered, the proportion of order would be destroyed, just as if one string were stretched more than it ought to be, the melody of the harp would be destroyed. Yet God could make other things, or add something to those things that are made, and then that universe would be better.

Aquinas, *Summa Theologica*, I, 25, 6

- 36 One God produced one world by reason of His love for Himself.

Aquinas, *Summa Theologica*, I, 32, 1

- 37 Nothing except God can be from eternity. And this statement is not impossible to uphold, for . . . the will of God is the cause of things. Therefore things are necessary according as it is necessary for God to will them, since the necessity of the effect depends on the necessity of the cause. . . . Absolutely speaking, it is not necessary that God should will anything except Himself. It is not therefore necessary for God to will that the world should always exist; but the world is eternal to the extent that God wills it to be eternal, since the being of the world depends on the will of God, as on its cause. It is not therefore necessary for the world to be always.

Aquinas, *Summa Theologica*, I, 46, 1

- 38 We hold by faith alone, and it cannot be proved by demonstration, that the world did not always exist. . . . The reason of this is that the newness of the world cannot be demonstrated from the world itself. For the principle of demonstration is the essence of a thing. Now everything according to the notion of its species abstracts from here and now; hence it is said that “universals are everywhere and always.” Hence it cannot be demonstrated that man, or heaven, or a stone did not always exist.

Likewise neither can it be demonstrated on the part of the efficient cause, which acts by will. For the will of God cannot be investigated by reason, except as regards those things which God must will of necessity, and what He wills about creatures is not among these. . . . But the divine will can be manifested to man by revelation, on which faith rests. Hence that the world began to exist is

an object of faith, but not of demonstration or science. And it is useful to consider this, lest anyone, presuming to demonstrate what is of faith, should bring forward reasons that are not cogent, so as to give occasion to unbelievers to laugh, thinking that on such reasons we believe things that are of faith.

Aquinas, *Summa Theologica*, I, 46, 2

- 39 As the end of a thing corresponds to its beginning, it is not possible to be ignorant of the end of things if we know their beginning. Therefore, since the beginning of all things is something outside the universe, namely, God . . . we must conclude that the end of all things is some extrinsic good. This can be proved by reason. For it is clear that good has the nature of an end; therefore, a particular end of anything consists in some particular good, while the universal end of all things is the universal good. But the universal good is that which is good of itself by virtue of its essence, which is the very essence of goodness, whereas a particular good is good by participation. Now it is manifest that in the whole created universe there is not a good which is not such by participation. Therefore that good which is the end of the whole universe must be a good outside the universe.

Aquinas, *Summa Theologica*, I, 103, 2

- 40 Not to have gain of any good unto himself, which may not be, but that his splendour might, as it glowed, declare, *I am*.

In his eternity beyond time, beyond all other comprehension, as was his pleasure, the eternal love revealed him in new loves.

Nor did he lie, as slumbering, before; for nor before nor after was the process of God's outflowing over these waters.

Form and matter, united and in purity, issued into being which had no flaw, as from a three-stringed bow three arrows;

and as in glass, in amber, or in crystal, a ray so gloweth that from its coming to its pervading all, there is no interval.

Dante, *Paradiso*, XXIX, 13

- 41 Oh grace abounding, wherein I presumed to fix my look on the eternal light so long that I consumed my sight thereon!

Within its depths I saw ingathered, bound by love in one volume, the scattered leaves of all the universe;

substance and accidents and their relations, as though together fused, after such fashion that what I tell of is one simple flame.

The universal form of this complex I think that I beheld, because more largely, as I say this, I feel that I rejoice.

A single moment maketh a deeper lethargy for me than twenty and five centuries have wrought on

the emprise that erst threw Neptune in amaze at Argo's shadow.

Dante, *Paradiso*, XXXIII, 82

42 Aristotle says that the movement of a body which is one and simple is simple, and the simple movements are the rectilinear and the circular. And of rectilinear movements, one is upward, and the other is downward. As a consequence, every simple movement is either toward the centre, i.e., downward, or away from the centre, i.e., upward, or around the centre, i.e., circular. Now it belongs to earth and water, which are considered heavy, to be borne downward, i.e., to seek the centre: for air and fire, which are endowed with lightness, move upward, i.e., away from the centre. It seems fitting to grant rectilinear movement to these four elements and to give the heavenly bodies a circular movement around the centre. So Aristotle. Therefore, said Ptolemy of Alexandria, if the Earth moved, even if only by its daily rotation, the contrary of what was said above would necessarily take place. For this movement which would traverse the total circuit of the Earth in twenty-four hours would necessarily be very headlong and of an unsurpassable velocity. Now things which are suddenly and violently whirled around are seen to be utterly unfitted for reuniting, and the more unified are seen to become dispersed, unless some constant force constrains them to stick together. And a long time ago, he says, the scattered Earth would have passed beyond the heavens, as is certainly ridiculous; and *a fortiori* so would all the living creatures and all the other separate masses which could by no means remain unshaken. Moreover, freely falling bodies would not arrive at the places appointed them, and certainly not along the perpendicular line which they assume so quickly. And we would see clouds and other things floating in the air always borne toward the west.

For these and similar reasons they say that the Earth remains at rest at the middle of the world and that there is no doubt about this. But if someone opines that the Earth revolves, he will also say that the movement is natural and not violent. Now things which are according to nature produce effects contrary to those which are violent. For things to which force or violence is applied get broken up and are unable to subsist for a long time. But things which are caused by nature are in a right condition and are kept in their best organization. Therefore Ptolemy had no reason to fear that the Earth and all things on the Earth would be scattered in a revolution caused by the efficacy of nature, which is greatly different from that of art or from that which can result from the genius of man. But why did he not feel anxiety about the world instead, whose movement must necessarily be of greater velocity, the greater the heavens are than the Earth? Or have the heavens

become so immense, because an unspeakably vehement motion has pulled them away from the centre, and because the heavens would fall if they came to rest anywhere else?

Surely if this reasoning were tenable, the magnitude of the heavens would extend infinitely. For the farther the movement is borne upward by the vehement force, the faster will the movement be, on account of the ever-increasing circumference which must be traversed every twenty-four hours: and conversely, the immensity of the sky would increase with the increase in movement. In this way, the velocity would make the magnitude increase infinitely, and the magnitude the velocity. And in accordance with the axiom of physics that *that which is infinite cannot be traversed or moved in any way*, then the heavens will necessarily come to rest.

But they say that beyond the heavens there is not any body or place or void or anything at all; and accordingly it is not possible for the heavens to move outward: in that case it is rather surprising that something can be held together by nothing. But if the heavens were infinite and were finite only with respect to a hollow space inside, then it will be said with more truth that there is nothing outside the heavens, since anything which occupied any space would be in them; but the heavens will remain immobile. For movement is the most powerful reason wherewith they try to conclude that the universe is finite.

But let us leave to the philosophers of nature the dispute as to whether the world is finite or infinite, and let us hold as certain that the Earth is held together between its two poles and terminates in a spherical surface. Why therefore should we hesitate any longer to grant to it the movement which accords naturally with its form, rather than put the whole world in a commotion—the world whose limits we do not and cannot know? And why not admit that the appearance of daily revolution belongs to the heavens but the reality belongs to the Earth?

Copernicus, *De Revolutionibus*, I, 7–8

43 Pitiable is the state of the stars, abject the lot of earth, if this high dignity of soul is denied them, while it is granted to the worm, the ant, the roach, to plants and moths; for in that case worms, roaches, moths, were more beauteous objects in nature and more perfect, inasmuch as nothing is excellent, nor precious, nor eminent, that hath not soul. But since living bodies spring from earth and sun and by them are animate, and since in the earth herbage springs up without sowing of seeds (*e.g.*, when soil is taken out of the bowels of the earth and carried to some great elevation or to the top of a lofty tower and there exposed to the sunshine, after a little while a miscellaneous herbage springs up in it unbidden), it is not likely that they (sun and earth) can do that which is not in them-

selves; but they awaken souls, and consequently are themselves possessed of souls. Therefore the bodies of the globes, as being the foremost parts of the universe, to the end they might be in themselves and in their state endure, had need of souls to be conjoined to them, for else there were neither life, nor prime act, nor movement, nor union, nor order, nor coherence, nor *conactus*, nor *sympathia*, nor any generation, nor alternation of seasons, and no propagation; but all were in confusion and the entire world lapse into chaos, and, in fine, the earth were void and dead and without any use.

William Gilbert, *On the Loadstone*, V, 12

- 44 The world . . . is alone, having nothing outside, resting on itself immobile as a whole; and it alone is all things.

Kepler, *Epitome of Copernican Astronomy*, Bk. IV, I, 2

- 45 If it was Tycho Brahe's opinion concerning that bare wilderness of globes that it does not exist fruitlessly in the world but is filled with inhabitants: with how much greater probability shall we make a conjecture as to God's works and designs even for the other globes, from that variety which we discern in this globe of the Earth. For He Who created the species which should inhabit the waters, beneath which however there is no room for the air which living things draw in; Who sent birds supported on wings into the wilderness of the air; Who gave white bears and white wolves to the snowy regions of the North, and as food for the bears the whale, and for the wolves, birds' eggs; Who gave lions to the deserts of burning Libya and camels to the wide-spread plains of Syria, and to the lions an endurance of hunger, and to the camels an endurance of thirst: did He use up every art in the globe of the Earth so that He was unable, every goodness so that he did not wish, to adorn the other globes too with their fitting creatures, as either the long or short revolutions, or the nearness or removal of the sun, or the variety of eccentricities or the shine or darkness of the bodies, or the properties of the figures where-with any region is supported persuaded?

Kepler, *Harmonies of the World*, V, 10

- 46 *Hamlet*. Indeed it goes so heavily with my disposition that this goodly frame, the earth, seems to me a sterile promontory, this most excellent canopy, the air, look you, this brave o'erhanging firmament, this majestical roof fretted with golden fire, why, it appears no other thing to me than a foul and pestilent congregation of vapours.

Shakespeare, *Hamlet*, II, ii, 308

- 47 *Ulysses*. The heavens themselves, the planets, and this centre
Observe degree, priority, and place,
Insisture, course, proportion, season, form,

Office, and custom, in all line of order;
And therefore is the glorious planet Sol
In noble eminence enthroned and sphered
Amidst the other; whose medicinable eye
Corrects the ill aspects of planets evil,
And posts, like the commandment of a king,
Sans check, to good and bad. But when the planets
In evil mixture to disorder wander,
What plagues and what portents! what mutiny!
What raging of the sea! shaking of earth!
Commotion in the winds! frights, changes, horrors,
Divert and crack, rend and deracinate
The unity and married calm of states
Quite from their fixure!

Shakespeare, *Troilus and Cressida*, I, iii, 85

- 48 I had rather believe all the fables in the Legend, and the Talmud, and the Alcoran, than that this universal frame is without a mind.

Bacon, *Of Atheism*

- 49 I resolved to leave all this world to their disputes, and to speak only of what would happen in a new world if God now created, somewhere in an imaginary space, matter sufficient wherewith to form it, and if He agitated in diverse ways, and without any order, the diverse portions of this matter, so that there resulted a chaos as confused as the poets ever feigned, and concluded His work by merely lending His concurrence to Nature in the usual way, leaving her to act in accordance with the laws which He had established. So, to begin with, I described this matter and tried to represent it in such a way, that it seems to me that nothing in the world could be more clear or intelligible, excepting what has just been said of God and the Soul. For I even went so far as expressly to assume that there was in it none of these forms or qualities which are so debated in the Schools, nor anything at all the knowledge of which is not so natural to our minds that none could even pretend to be ignorant of it. Further, I pointed out what are the laws of Nature, and, without resting my reasons on any other principle than the infinite perfections of God, I tried to demonstrate all those of which one could have any doubt, and to show that they are of such a nature that even if God had created other worlds, He could not have created any in which these laws would fail to be observed. After that, I showed how the greatest part of the matter of which this chaos is constituted, must in accordance with these laws, dispose and arrange itself in such a fashion as to render it similar to our heavens; and how meantime some of its parts must form an earth, some planets and comets, and some others a sun and fixed stars.

Descartes, *Discourse on Method*, V

- 50 It . . . occurs to me that we should not consider

one single creature separately, when we inquire as to whether the works of God are perfect, but should regard all his creations together. For the same thing which might possibly seem very imperfect with some semblance of reason if regarded by itself, is found to be very perfect if regarded as part of the whole universe.

Descartes, *Meditations on First Philosophy*, IV

- 51 From the mere fact that God, i.e. a supremely perfect being, exists, it follows that if there be a world it must have been created by him.

Descartes, *Objections and Replies*, III

- 52 Those philosophers who said [that] the world, or the soul of the world, was God spake unworthily of Him, and denied His existence: for by God is understood the cause of the world; and to say the world is God is to say there is no cause of it, that is, no God.

Hobbes, *Leviathan*, II, 31

- 53 To say the world was not created, but eternal, seeing that which is eternal has no cause, is to deny there is a God.

Hobbes, *Leviathan*, II, 31

- 54 But while all men doubt, and none can determine how long the World shall last, some may wonder that it hath spun out so long and unto our days. For if the Almighty had not determin'd a fixed duration unto it, according to his mighty and merciful designments in it, if he had not said unto it, as he did unto a part of it, hitherto shalt thou go and no farther; if we consider the incessant and cutting provocations from the Earth, it is not without amazement how his patience hath permitted so long a continuance unto it, how he, who cursed the Earth in the first days of the first Man, and drowned it in the tenth Generation after, should thus lastingly contend with Flesh and yet defer the last flames.

Sir Thomas Browne, *Christian Morals*, III, 26

- 55 Think not thy time short in this World since the World it self is not long. The created World is but a small *Parenthesis* in Eternity; and a short interposition for a time between such a state of duration, as was before it and may be after it. And if we should allow of the old Tradition that the world should last Six Thousand years, it could scarce have the name of old, since the first Man lived near a sixth part thereof, and seven *Methusela's* would exceed its whole duration.

Sir Thomas Browne, *Christian Morals*, III, 29

- 56 The whole visible world is only an imperceptible atom in the ample bosom of nature. No idea approaches it. We may enlarge our conceptions beyond all imaginable space; we only produce atoms in comparison with the reality of things. It is

an infinite sphere, the centre of which is everywhere, the circumference nowhere. In short, it is the greatest sensible mark of the almighty power of God that imagination loses itself in that thought.

Pascal, *Pensées*, II, 72

- 57 *Uriel*. I saw when at his Word the formless Mass,
This worlds material mould, came to a heap:
Confusion heard his voice, and wilde uproar
Stood rul'd, stood vast infinitude confin'd;
Till at his second bidding darkness fled,
Light shon, and order from disorder sprung:
Swift to thir several Quarters hasted then
The cumbrous Elements, Earth, Flood, Aire, Fire,
And this Ethereal quintessence of Heav'n
Flew upward, spirited with various forms,
That rowld orbicular, and turnd to Starrs
Numberless, as thou seest, and how they move;
Each had his place appointed, each his course,
The rest in circuit walles this Universe.
Look downward on that Globe whose hither side
With light from hence, though but reflected,
shines;
That place is Earth the seat of Man, that light
His day, which else as th' other Hemisphere
Night would invade, but there the neighbouring
Moon
(So call that opposite fair Starr) her aide
Timely interposes, and her monthly round
Still ending, still renewing through mid Heav'n,
With borrowd light her countenance triform
Hence fills and empties to enlighten the Earth,
And in her pale dominion checks the night.

Milton, *Paradise Lost*, III, 708

- 58 Let ther be Light, said God, and forthwith Light
Ethereal, first of things, quintessence pure
Sprung from the Deep, and from her Native East
To journie through the airie gloom began,
Sphear'd in a radiant Cloud, for yet the Sun
Was not; shee in a cloudie Tabernacle
Sojourn'd the while. God saw the Light was good;
And light from darkness by the Hemisphere
Divided: Light the Day, and Darkness Night
He nam'd. Thus was the first Day Eev'n and
Morn.

Milton, *Paradise Lost*, VII, 243

- 59 *Michael*. So shall the World goe on,
To good malignant, to bad men benigne,
Under her own waight groaning, till the day
Appeer of respiration to the just,
And vengeance to the wicked, at return
Of him so lately promiss'd to thy aid,
The Womans seed, obscurely then foretold,
Now amplier known thy Saviour and thy Lord,
Last in the Clouds from Heav'n to be reveal'd
In glory of the Father, to dissolve
Satan with his perverted World, then raise
From the conflagrantly mass, purg'd and refin'd,

New Heav'ns, new Earth, Ages of endless date
Founded in righteousness and peace and love,
To bring forth fruits Joy and eternal Bliss.

Milton, *Paradise Lost*, XII, 537

60 Things could have been produced by God in no other manner and in no other order than that in which they have been produced. All things have necessarily followed from the given nature of God, and from the necessity of His nature have been determined to existence and action in a certain manner. If, therefore, things could have been of another nature, or could have been determined in another manner to action, so that the order of nature would have been different, the nature of God might then be different to that which it now is, and hence that different nature would necessarily exist, and there might consequently be two or more Gods, which is absurd. Therefore, things could be produced by God in no other manner and in no other order than that in which they have been produced.

Spinoza, *Ethics*, I, Prop. 33; Demonstr.

61 It seems probable to me that God in the beginning formed matter in solid, massy, hard, impenetrable, moveable particles, of such sizes and figures, and with such other properties, and in such proportion to space, as most conduced to the end for which he formed them; and that these primitive particles being solids, are incomparably harder than any porous bodies compounded of them; even so very hard as never to wear or break in pieces; no ordinary power being able to divide what God himself made one in the first creation. While the particles continue entire, they may compose bodies of one and the same nature and texture in all ages; but should they wear away, or break in pieces, the nature of things depending on them would be changed. Water and earth, composed of old worn particles and fragments of particles, would not be of the same nature and texture now, with water and earth composed of entire particles in the beginning. And, therefore, that Nature may be lasting, the changes of corporeal things are to be placed only in the various separations and new associations and motions of these permanent particles.

Newton, *Optics*, III, 1

62 By the help of these principles [of motion], all material things seem to have been composed of the hard and solid particles above mentioned, variously associated in the first creation by the counsel of an intelligent agent. For it became Him who created them to set them in order. And if He did so, it is unphilosophical to seek for any other origin of the world, or to pretend that it might arise out of a chaos by the mere laws of Nature; though, being once formed, it may continue by those laws for many ages. For while comets move

in very eccentric orbs in all manner of positions, blind fate could never make all the planets move one and the same way in orbs concentric, some inconsiderable irregularities excepted, which may have risen from the mutual actions of comets and planets upon one another, and which will be apt to increase, till this system wants a reformation. Such a wonderful uniformity in the planetary system must be allowed the effect of choice.

Newton, *Optics*, III, 1

63 Since space is divisible *in infinitum*, and matter is not necessarily in all places, it may be also allowed that God is able to create particles of matter of several sizes and figures, and in several proportions to space, and perhaps of different densities and forces, and thereby to vary the laws of Nature, and make worlds of several sorts in several parts of the Universe. At least, I see nothing of contradiction in all this.

Newton, *Optics*, III, 1

64 Although the world is not metaphysically necessary, so that its opposite involves a contradiction or logical absurdity, it is nevertheless physically necessary or so determined that its opposite involves imperfection or moral absurdity. And as possibility is the principle of essence, so perfection or degree of essence (through which more things are compossible the greater it is) is the principle of existence. Whence at the same time it is manifest how the Author of the world is free, although He does all things determinately, for He acts from a principle of wisdom or perfection. Indifference springs from ignorance, and the wiser a man is the more is he determined towards that which is most perfect.

Leibniz, *On the Ultimate Origination of Things*

65 It follows from the supreme perfection of God that in producing the universe He has chosen the best possible plan, in which there is the greatest variety along with the greatest order; ground, place, time being as well arranged as possible; the greatest effect produced by the simplest ways; the most power, knowledge, happiness and goodness in created things that the universe allowed. For as all possible things in the understanding of God claim existence in proportion to their perfections, the result of all these claims must be the most perfect actual world that is possible. And apart from this it would not be possible to give a reason why things have gone thus rather than otherwise.

Leibniz, *Principles of Nature and of Grace*, 10

66 If we would emancipate ourselves from vulgar notions, and raise our thoughts, as far as they would reach, to a closer contemplation of things, we might be able to aim at some dim and seeming conception how *matter* might at first be made, and

begin to exist, by the power of that eternal first Being: but to give beginning and being to a *spirit* would be found a more inconceivable effect of omnipotent power. But this being what would perhaps lead us too far from the notions on which the philosophy now in the world is built, it would not be pardonable to deviate so far from them; or to inquire, so far as grammar itself would authorize, if the common settled opinion opposes it: especially in this place, where the received doctrine serves well enough to our present purpose, and leaves this past doubt, that the creation or beginning of any one *substance* out of nothing being once admitted, the creation of all other but the *Creator* himself, may, with the same ease, be supposed.

Locke, *Concerning Human Understanding*,
Bk. IV, X, 18

- 67 We must not imagine that the inexplicably fine machine of an animal or vegetable costs the great Creator any more pains or trouble in its production than a pebble does; nothing being more evident than that an Omnipotent Spirit can indifferently produce everything by a mere *fiat* or act of His will. Hence, it is plain that the splendid profusion of natural things should not be interpreted weakness or prodigality in the agent who produces them, but rather be looked on as an argument of the riches of His power.

Berkeley, *Principles of Human Knowledge*, 152

- 68 See, thro' this air, this ocean, and this earth,
All matter quick, and bursting into birth.
Above, how high progressive life may go!
Around, how wide! how deep extend below!
Vast chain of being, which from God began,
Natures æthereal, human, angel, man,
Beast, bird, fish, insect! what no eye can see,
No glass can reach! from Infinite to thee,
From thee to Nothing!—On superior pow'rs
Were we to press, inferior might on ours:
Or in the full creation leave a void,
Where, one step broken, the great scale's
destroy'd:
From Nature's chain whatever link you strike,
Tenth or ten thousandth, breaks the chain alike.
And if each system in gradation roll,
Alike essential to th' amazing whole;
The least confusion but in one, not all
That system only, but the whole must fall.
Let Earth unbalanc'd from her orbit fly,
Planets and Suns run lawless thro' the sky,
Let ruling Angels from their spheres be hurl'd,
Being on being wreck'd, and world on world,
Heav'n's whole foundations to their centre nod,
And Nature tremble to the throne of God.

Pope, *Essay on Man*, Epistle I, 233

- 69 The world may indeed be considered as a vast machine, in which the great wheels are originally set in motion by those which are very minute, and

almost imperceptible to any but the strongest eyes.

Fielding, *Tom Jones*, V, 4

- 70 There are many philosophers who, after an exact scrutiny of all the phenomena of nature, conclude, that the *whole*, considered as one system, is, in every period of its existence, ordered with perfect benevolence; and that the utmost possible happiness will, in the end, result to all created beings, without any mixture of positive or absolute ill or misery. Every physical ill, say they, makes an essential part of this benevolent system, and could not possibly be removed, even by the Deity himself, considered as a wise agent, without giving entrance to greater ill, or excluding greater good, which will result from it. From this theory, some philosophers, and the ancient Stoics among the rest, derived a topic of consolation under all afflictions, while they taught their pupils that those ills under which they laboured were, in reality, goods to the universe; and that to an enlarged view, which could comprehend the whole system of nature, every event became an object of joy and exultation. But though this topic be specious and sublime, it was soon found in practice weak and ineffectual. You would surely more irritate than appease a man lying under the racking pains of the gout by preaching up to him the rectitude of those general laws, which produced the malignant humours in his body, and led them through the proper canals, to the sinews and nerves, where they now excite such acute torments. These enlarged views may, for a moment, please the imagination of a speculative man, who is placed in ease and security; but neither can they dwell with constancy on his mind, even though undisturbed by the emotions of pain or passion; much less can they maintain their ground when attacked by such powerful antagonists.

Hume, *Concerning Human Understanding*, VIII, 79

- 71 Pangloss taught metaphysico-theologo-cosmology. He proved most admirably, that there could not be an effect without a cause; that, in this best of possible worlds, my Lord the Baron's castle was the most magnificent of castles, and my Lady the best of Baronesses that possibly could be. "It is demonstrable," said he, "that things cannot be otherwise than they are: for all things having been made for some end, they must necessarily be for the best end. Observe well, that the nose has been made for carrying spectacles; therefore we have spectacles. The legs are visibly designed for stockings, and therefore we have stockings. Stones have been formed to be hewn, and make castles; therefore my Lord has a very fine castle; the greatest baron of the province ought to be the best accommodated. Swine were made to be eaten; therefore we eat pork all the year round: con-

sequently, those who have merely asserted that all is good have said a very foolish thing; they should have said all is the best possible."

Voltaire, *Candide*, I

- 72 The day following, having found some provisions, in rummaging through the rubbish, they recruited their strength a little. Afterwards, they employed themselves like others, in administering relief to the inhabitants that had escaped from death. Some citizens that had been relieved by them gave them as good a dinner as could be expected amidst such a disaster. It is true that the repast was mournful, and the guests watered their bread with their tears. But Pangloss consoled them by the assurance that things could not be otherwise; "For," said he, "all this must necessarily be for the best. As this volcano is at Lisbon, it could not be elsewhere; as it is impossible that things should not be what they are, as all is good."

A little man clad in black, who belonged to the inquisition, and sat at his side, took him up very politely, and said: "It seems, sir, you do not believe in original sin; for if all is for the best, then there has been neither fall nor punishment."

"I most humbly ask your excellency's pardon," answered Pangloss, still more politely; "for the fall of man and the curse necessarily entered into the best of worlds possible." "Then, sir, you do not believe there is liberty," said the inquisitor. "Your excellency will excuse me," said Pangloss; "liberty can consist with absolute necessity; for it was necessary we should be free; because, in short, the determinate will—"

Pangloss was in the middle of his proposition, when the inquisitor made a signal with his head to the tall armed footman in a cloak.

Voltaire, *Candide*, V

- 73 Candide, affrighted, interdicted, astonished, all bloody, all panting, said to himself: "If this is the best of possible worlds, what then are the rest?"

Voltaire, *Candide*, VI

- 74 Why, as we are so miserable, have we imagined that not to be is a great ill, when it is clear that it was not an ill not to be before we were born? . . . Why do we exist? why is there anything?

Voltaire, *Philosophical Dictionary*: Why?

- 75 Every beginning is in time, and all limits to extension are in space. But space and time are in the world of sense. Consequently phenomena in the world are conditionally limited, but the world itself is not limited, either conditionally or unconditionally.

Kant, *Critique of Pure Reason*,
Transcendental Dialectic

- 76 Tiger! Tiger! burning bright
In the forests of the night,

What immortal hand or eye
Could frame thy fearful symmetry? . . .

When the stars threw down their spears,
And water'd heaven with their tears,
Did he smile his work to see?
Did he who made the Lamb make thee?

Blake, *The Tiger*

- 77 *Faust*. 'Tis written: "In the beginning was the Word!"

Here now I'm balked! Who'll put me in accord?
It is impossible, the *Word* so high to prize,
I must translate it otherwise
If I am rightly by the Spirit taught.

'Tis written: In the beginning was the *Thought!*

Consider well that line, the first you see,
That your pen may not write too hastily!

Is it then *Thought* that works, creative, hour by hour?

Thus should it stand: In the beginning was the *Power!*

Yet even while I write this word, I falter,

For something warns me, this too I shall alter.

The Spirit's helping me! I see now what I need

And write assured: In the beginning was the *Deed!*

Goethe, *Faust*, I, 1224

- 78 It is not impossible that to some infinitely superior being the whole universe may be as one plain, the distance between planet and planet being only as the pores in a grain of sand, and the spaces between system and system no greater than the intervals between one grain and the grain adjacent.

Coleridge, *Omniana*

- 79 This world, after all our science and sciences, is still a miracle; wonderful, inscrutable, magical and more, to whosoever will think of it.

Carlyle, *The Hero as Divinity*

- 80 There is no chance and no anarchy in the universe. All is system and gradation. Every god is there sitting in his sphere. The young mortal enters the hall of the firmament; there is he alone with them alone, they pouring on him benedictions and gifts, and beckoning him up to their thrones. On the instant, and incessantly, fall snowstorms of illusions. He fancies himself in a vast crowd which sways this way and that and whose movement and doings he must obey: he fancies himself poor, orphaned, insignificant. The mad crowd drives hither and thither, now furiously commanding this thing to be done, now that. What is he that he should resist their will, and think or act for himself? Every moment new changes and new showers of deceptions to baffle and distract him. And when, by and by, for an instant, the air clears and the cloud lifts a little, there are the gods still sitting around him on their thrones—they alone with him alone.

Emerson, *Illusions*

81 To go into solitude, a man needs to retire as much from his chamber as from society. I am not solitary whilst I read and write, though nobody is with me. But if a man would be alone, let him look at the stars. The rays that come from those heavenly worlds will separate between him and what he touches. One might think the atmosphere was made transparent with this design, to give man, in the heavenly bodies, the perpetual presence of the sublime. Seen in the streets of cities, how great they are! If the stars should appear one night in a thousand years, how would men believe and adore; and preserve for many generations the remembrance of the city of God which had been shown! But every night come out these envoys of beauty, and light the universe with their admonishing smile.

Emerson, *Nature*, I

82 Many an aeon moulded earth before her highest,
man, was born,
Many an aeon too may pass when earth is man-
less and forlorn.

Tennyson, *Locksley Hall*
Sixty Years After, 205

83 This fine old world of ours is but a child
Yet in the go-cart. Patience! Give it time
To learn its limbs; there is a hand that guides.

Tennyson, *The Princess*, Conclusion, 77

84 This may not be the best of all possible worlds,
but to say that it is the worst is mere petulant
nonsense.

T. H. Huxley, *Struggle for Existence*
in Human Society

85 The year's at the spring
And day's at the morn;
Morning's at seven;
The hillside's dew-pearled;
The lark's on the wing;
The snail's on the thorn:
God's in his heaven—
All's right with the world!

Browning, *Pippa Passes*, I

86 The bodies and beings on the surface of our earth express the harmonious relation of the cosmic conditions of our planet and our atmosphere with the beings and phenomena whose existence they permit. Other cosmic conditions would necessarily make another world appear in which all the phenomena would occur which found in it their necessary conditions, and from which would disappear all that could not develop in it. But no matter what infinite varieties of phenomena we conceive on the earth, by placing ourselves in thought in all the cosmic conditions that our imagination can bring to birth, we are still forced

to admit that this would all take place according to the laws of physics, chemistry and physiology, which have existed without our knowledge from all eternity; and that whatever happens, nothing is created by way either of force or of matter; that only different relations will be produced and through them creation of new beings and phenomena.

Claude Bernard, *Experimental Medicine*, II, 1

87 *Ivan*. "I tell you that I accept God simply. But you must note this: if God exists and if He really did create the world, then, as we all know, He created it according to the geometry of Euclid and the human mind with the conception of only three dimensions in space. Yet there have been and still are geometricians and philosophers, and even some of the most distinguished, who doubt whether the whole universe, or to speak more widely, the whole of being, was only created in Euclid's geometry; they even dare to dream that two parallel lines, which according to Euclid can never meet on earth, may meet somewhere in infinity. I have come to the conclusion that, since I can't understand even that, I can't expect to understand about God. I acknowledge humbly that I have no faculty for settling such questions; I have a Euclidian earthly mind, and how could I solve problems that are not of this world? And I advise you never to think about it either, my dear Alysha, especially about God, whether He exists or not. All such questions are utterly inappropriate for a mind created with an idea of only three dimensions. And so I accept God and am glad to, and what's more, I accept His wisdom, His purpose—which are utterly beyond our ken; I believe in the underlying order and the meaning of life; I believe in the eternal harmony in which they say we shall one day be blended. I believe in the Word to Which the universe is striving, and Which Itself was 'with God,' and Which Itself is God and so on, and so on, to infinity. There are all sorts of phrases for it. I seem to be on the right path, don't I? Yet would you believe it, in the final result I don't accept this world of God's and, although I know it exists, I don't accept it at all. It's not that I don't accept God, you must understand, it's the world created by Him I don't and cannot accept. Let me make it plain. I believe like a child that suffering will be healed and made up for, that all the humiliating absurdity of human contradictions will vanish like a pitiful mirage, like the despicable fabrication of the impotent and infinitely small Euclidian mind of man, that in the world's finale, at the moment of eternal harmony, something so precious will come to pass that it will suffice for all hearts, for the comforting of all resentments, for the atonement of all the crimes of humanity, of all the blood they've shed; that it will make it not only possible to forgive but to justify all that has happened with men—but

though all that may come to pass, I don't accept it. I won't accept it. Even if parallel lines do meet and I see it myself, I shall see it and say that they've met, but still I won't accept it. That's what's at the root of me, Alyosha; that's my creed. I am in earnest in what I say. I began our talk as stupidly as I could on purpose, but I've led up to my confession, for that's all you want. You didn't want to hear about God, but only to know what the brother you love lives by. And so I've told you."

Ivan concluded his long tirade with marked and unexpected feeling.

Dostoevsky, *Brothers Karamazov*, Pt. II, V, 3

- 88 *Father Zossima*. "All creation and all creatures, every leaf is striving to the Word, singing glory to God, weeping to Christ, unconsciously accomplishing this by the mystery of their sinless life. Yonder," said I, "in the forest wanders the dreadful bear, fierce and menacing, and yet innocent in it." And I told him how once a bear came to a great saint who had taken refuge in a tiny cell in the wood. And the great saint pitied him, went up to him without fear and gave him a piece of bread. "Go along," said he, "Christ be with you," and the savage beast walked away meekly and obediently, doing no harm. And the lad was delighted that the bear had walked away without hurting the saint, and that Christ was with him too. "Ah," said he, "how good that is, how good and beautiful is all God's work!" He sat musing softly and sweetly. I saw he understood. And he slept beside me a light and sinless sleep. May God bless youth! And I prayed for him as I went to sleep. Lord, send peace and light to Thy people!
- Dostoevsky, *Brothers Karamazov*, Pt. II, VI, 1

- 89 Pierre went up to the fire, ate some roast horse-flesh, lay down with his back to the fire, and immediately fell asleep. He again slept as he had done at Mozháysk after the battle of Borodínó. Again real events mingled with dreams and again someone, he or another, gave expression to his thoughts, and even to the same thoughts that had been expressed in his dream at Mozháysk.

"Life is everything. Life is God. Everything changes and moves and that movement is God. And while there is life there is joy in consciousness of the divine. To love life is to love God. Harder and more blessed than all else is to love this life in one's sufferings, in innocent sufferings."

"Karataév!" came to Pierre's mind. And suddenly he saw vividly before him a long-forgotten, kindly old man who had given him geography lessons in Switzerland. "Wait a bit," said the old man, and showed Pierre a globe. This globe was alive—a vibrating ball without fixed dimensions. Its whole surface consisted of drops closely pressed together, and all these drops moved and changed places, sometimes several of

them merging into one, sometimes one dividing into many. Each drop tried to spread out and occupy as much space as possible, but others striving to do the same compressed it, sometimes destroyed it, and sometimes merged with it.

"That is life," said the old teacher.

"How simple and clear it is," thought Pierre. "How is it I did not know it before?"

"God is in the midst, and each drop tries to expand so as to reflect Him to the greatest extent. And it grows, merges, disappears from the surface, sinks to the depths, and again emerges. There now, Karataév has spread out and disappeared. Do you understand, my child?" said the teacher.

"Do you understand, damn you?" shouted a voice, and Pierre woke up.

Tolstoy, *War and Peace*, XIV, 15

- 90 Away with those wearisomely hackneyed terms Optimism and Pessimism! For the occasion for using them becomes less and less from day to day; only the chatterboxes still find them so absolutely necessary. For why in all the world should any one wish to be an optimist unless he had a God to defend who *must* have created the best of worlds if he himself be goodness and perfection,—what thinker, however, still needs the hypothesis of a God? But every occasion for a pessimistic confession of faith is also lacking when one has no interest in being annoyed at the advocates of God (the theologians, or the theologising philosophers), and in energetically defending the opposite view, that evil reigns, that pain is greater than pleasure, that the world is a bungled piece of work, the manifestation of an ill-will to life. But who still bothers about the theologians now—except the theologians? Apart from all theology and its contentions, it is quite clear that the world is not good and not bad (to say nothing of its being the best or the worst), and that the terms "good" and "bad" have only significance with respect to man, and indeed, perhaps, they are not justified even here in the way they are usually employed; in any case we must get rid of both the calumniating and the glorifying conception of the world.

Nietzsche, *Human, All-Too-Human*, 28

- 91 What at bottom is meant by calling the universe many or by calling it one?

Pragmatically interpreted, pluralism or the doctrine that it is many means only that the sundry parts of reality *may be externally related*. Everything you can think of, however vast or inclusive, has on the pluralistic view a genuinely 'external' environment of some sort or amount. Things are 'with' one another in many ways, but nothing includes everything, or dominates over everything. The word 'and' trails along after every sentence. Something always escapes. 'Ever not quite' has to be said of the best attempts made anywhere in the universe at attaining all-inclu-

siveness. The pluralistic world is thus more like a federal republic than like an empire or a kingdom. However much may be collected, however much may report itself as present at any effective centre of consciousness or action, something else is self-governed and absent and unreduced to unity.

Monism, on the other hand, insists that when you come down to reality as such, to the reality of realities, everything is present to *everything* else in one vast instantaneous co-implicated completeness—nothing can in *any* sense, functional or substantial, be really absent from anything else, all things interpenetrate and telescope together in the great total conflux.

William James, *A Pluralistic Universe*, VIII

92 There is a hideous fatalism about it [the Darwinian process], a ghastly and damnable reduction of beauty and intelligence, of strength and purpose, of honor and aspiration, to such casually picturesque changes as an avalanche may make in a mountain landscape, or a railway accident in a human figure. To call this Natural Selection is a blasphemy, possible to many for whom Nature is nothing but a casual aggregation of inert and dead matter, but eternally impossible to the spirits and souls of the righteous. If it be no blasphemy, but a truth of science, then the stars of heaven, the showers and dew, the winter and summer, the fire and heat, the mountains and hills, may no longer be called to exalt the Lord with us by praise: their work is to modify all things by blindly starving and murdering everything that is not lucky enough to survive in the universal struggle for hogwash.

Shaw, *Back to Methuselah*, Pref.

93 The riddle of the universe is not so simple. There is the aspect of permanence in which a given type of attainment is endlessly repeated for its own sake; and there is the aspect of transition to other things—it may be of higher worth, and it may be of lower worth. Also there are its aspects of struggle and of friendly help. But romantic ruthlessness

is no nearer to real politics, than is romantic self-abnegation.

Whitehead, *Science and the Modern World*, VI

94 The universe is an assemblage of solar systems which we have every reason to believe analogous to our own. No doubt they are not absolutely independent of one another. Our sun radiates heat and light beyond the farthest planet, and, on the other hand, our entire solar system is moving in a definite direction as if it were drawn. There is, then, a bond between the worlds. But this bond may be regarded as infinitely loose in comparison with the mutual dependence which unites the parts of the same world among themselves; so that it is not artificially, for reasons of mere convenience, that we isolate our solar system: nature itself invites us to isolate it. As living beings, we depend on the planet on which we are, and on the sun that provides for it, but on nothing else. As thinking beings, we may apply the laws of our physics to our own world, and extend them to each of the worlds taken separately; but nothing tells us that they apply to the entire universe, nor even that such an affirmation has any meaning; for the universe is not made, but is being made continually. It is growing, perhaps indefinitely, by the addition of new worlds.

Bergson, *Creative Evolution*, III

95 The world is everything that is the case.

The world is the totality of facts, not of things.

The world is determined by the facts, and by these being *all* the facts.

For the totality of facts determines both what is the case, and also all that is not the case.

The facts in logical space are the world.

The world divides into facts.

Any one can either be the case or not be the case, and everything else remain the same.

Wittgenstein, *Tractatus Logico-Philosophicus*, 1-1.21

96 Not *how* the world is, is the mystical, but *that* it is.

Wittgenstein, *Tractatus Logico-Philosophicus*, 6.44