

19.7 | Time

Unlike space, which elicits no comment from the poets, time is a subject about which they wax eloquent, indeed. It is also one that puzzles the philosophers even more than space does. Just as the quotations from Shakespeare's sonnets represent the range of the poetic response to time, so the quotations from Augustine's *Confessions* represent different aspects of the philosopher's puzzlement about time—about its definition; about its division into past, present, and future; about its beginning and end, or its endlessness; and about its relation to eternity or timelessness. In this last connection, the reader should observe that the word "eternity" is sometimes used for time everlasting, time without beginning or end, and sometimes for the transcendence of time, or timelessness. It is only in the second of these two meanings that one can make sense of the statement by Plato and others that time is the moving image of eternity.

Another point of dispute concerns the relation of time to motion, Aristotle asserting and Locke denying that time is the measure of motion. Philosophers apart, the physicists find time as indispensable as distance in the measurement of motion. But they in turn

dispute about such matters as the existence of absolute time as opposed to relative or local time, and about the separability or inseparability of time and space.

The issue touched on in Section 19.5, about the eternity of motion, without beginning or end, recurs here in a related question about time. Did time ever begin and will it ever end? One theologian, Augustine, explains the folly of asking what God was doing before the beginning of time; another, Aquinas, insists that if we affirm that the world and time did have a beginning, we must do so by faith in God's own revelation in the opening sentence of *Genesis*, for in no other way can we know an answer to the question. Aquinas takes a similar view of the end of the world and of time.

As in the case of space, so here too the reader will find a disagreement between Kant and James about the perception of time. In addition, the reader will find some interesting psychological observations by James concerning the experience of what he calls "the specious present," and concerning the difference between empty and filled time, as something experienced and as something remembered.

1 For a thousand years in thy sight are but as yesterday when it is past, and as a watch in the night.

Psalm 90:4

2 To every thing there is a season, and a time to every purpose under the heaven:

A time to be born, and a time to die; a time to plant, and a time to pluck up that which is planted;

A time to kill, and a time to heal; a time to break down, and a time to build up;

A time to weep, and a time to laugh; a time to mourn, and a time to dance;

A time to cast away stones, and a time to gather

stones together; a time to embrace, and a time to refrain from embracing;

A time to get, and a time to lose; a time to keep, and a time to cast away;

A time to rend, and a time to sew; a time to keep silence, and a time to speak;

A time to love, and a time to hate; a time of war, and a time of peace.

Ecclesiastes 3:1-8

3 *Chorus*. Time brings all things to pass.

Aeschylus, *Libation Bearers*, 965

4 *Timaeus*. When the father and creator saw the

creature which he had made moving and living, the created image of the eternal gods, he rejoiced, and in his joy determined to make the copy still more like the original; and as this was eternal, he sought to make the universe eternal, so far as might be. Now the nature of the ideal being was everlasting, but to bestow this attribute in its fullness upon a creature was impossible. Wherefore he resolved to have a moving image of eternity, and when he set in order the heaven, he made this image eternal but moving according to number, while eternity itself rests in unity; and this image we call time. For there were no days and nights and months and years before the heaven was created, but when he constructed the heaven he created them also. They are all parts of time, and the past and future are created species of time, which we unconsciously but wrongly transfer to the eternal essence; for we say that he "was," he "is," he "will be," but the truth is that "is" alone is properly attributed to him, and that "was" and "will be" are only to be spoken of becoming in time, for they are motions, but that which is immovably the same cannot become older or younger by time, nor ever did or has become, or hereafter will be, older or younger, nor is subject at all to any of those states which affect moving and sensible things and of which generation is the cause. These are the forms of time, which imitates eternity and revolves according to a law of number. Moreover, when we say that what has become *is* become and what becomes *is* becoming, and that what will become *is* about to become and that the non-existent *is* non-existent—all these are inaccurate modes of expression. . . .

Time, then, and the heaven came into being at the same instant in order that, having been created together, if ever there was to be a dissolution of them, they might be dissolved together. It was framed after the pattern of the eternal nature, that it might resemble this as far as was possible; for the pattern exists from eternity, and the created heaven has been, and is, and will be, in all time. Such was the mind and thought of God in the creation of time.

Plato, *Timaeus*, 37B

- 5 Time is a measure of motion and of being moved, and it measures the motion by determining a motion which will measure exactly the whole motion, as the cubit does the length by determining an amount which will measure out the whole. Further 'to be in time' means, for movement, that both it and its essence are measured by time (for simultaneously it measures both the movement and its essence, and this is what being in time means for it, that its essence should be measured).

Aristotle, *Physics*, 221^a1

- 6 Will time then fail? Surely not, if motion always exists. Is time then always different or does the

same time recur? Clearly time is, in the same way as motion is. For if one and the same motion sometimes recurs, it will be one and the same time, and if not, not.

Since the 'now' is an end and a beginning of time, not of the same time however, but the end of that which is past and the beginning of that which is to come, it follows that, as the circle has its convexity and its concavity, in a sense, in the same thing, so time is always at a beginning and at an end. And for this reason it seems to be always different; for the 'now' is not the beginning and the end of the same thing; if it were, it would be at the same time and in the same respect two opposites. And time will not fail; for it is always at a beginning.

Aristotle, *Physics*, 222^a29

- 7 Time . . . exists not by itself, but simply from the things which happen the sense apprehends what has been done in time past, as well as what is present and what is to follow after. And we must admit that no one feels time by itself abstracted from the motion and calm rest of things. So when they say that the daughter of Tyndarus was ravished and the Trojan nations were subdued in war, we must mind that they do not force us to admit that these things are by themselves, since those generations of men, of whom these things were accidents, time now gone by has irrevocably swept away.

Lucretius, *Nature of Things*, 1

- 8 See you not that even stones are conquered by time, that high towers fall and rocks moulder away, that shrines and idols of gods are worn out with decay, and that the holy divinity cannot prolong the bounds of fate or struggle against the fixed laws of nature?

Lucretius, *Nature of Things*, V

- 9 But time is lost, which never will renew,
While we too far the pleasing path pursue,
Surveying nature with too nice a view.

Virgil, *Georgics*, III

- 10 Ev'n as we speak, grim Time
speeds swift away;
Seize now and here the hour that is, nor trust
some later day!

Horace, *Odes*, I, 11

- 11 No round of hopes for us! So speaks the year.
And Time that steals our day.

Horace, *Odes*, IV, 7

- 12 Time flies.

Ovid, *Fasti*, VI, 5

- 13 Nothing is constant in the whole world. Everything is in a state of flux, and comes into being

as a transient appearance. Time itself flows on with constant motion, just like a river: for no more than a river can the fleeting hour stand still. As wave is driven on by wave, and, itself pursued, pursues the one before, so the moments of time at once flee and follow, and are ever new.

Ovid, *Metamorphoses*, XV

- 14 Our life is most short and unhappy,
Fading away like a flower, and even while we are
drinking,
Calling for garlands and girls and perfumes, old
age steals upon us,
Always, before we know.

Juvenal, *Satire IX*

- 15 Time is like a river made up of the events which
happen, and a violent stream: for as soon as a
thing has been seen, it is carried away, and another
comes in its place, and this will be carried away
too.

Marcus Aurelius, *Meditations*, IV, 43

- 16 What is in time is of a lower order than time itself: time is folded around what is in time exactly as—we read—it is folded about what is in place and in number.

Plotinus, *Fourth Ennead*, IV, 15

- 17 Time takes no holiday. It does not roll idly by, but through our senses works its own wonders in the mind. Time came and went from one day to the next; in its coming and its passing it brought me other hopes and other memories, and little by little patched me up again with the kind of delights which had once been mine.

Augustine, *Confessions*, IV, 8

- 18 Before God made heaven and earth, He did not make anything. For if He had made something, what would it have been but a creature? And I wish I knew all that it would be profitable for me to know, as well as I know that no creature was made before any creature was made.

But a lighter mind, adrift among images of time and its passing, might wonder that You, O God almighty and all-creating and all-conserving, Maker of heaven and earth, should have abstained from so vast a work for the countless ages that passed before You actually wrought it. Such a mind should awaken and realize how ill-grounded is his wonder.

How could countless ages pass when You, the Author and Creator of all ages, had not yet made them? What time could there be that You had not created? or how could ages pass, if they never were?

Thus, since You are the Maker of all times, if there actually was any time before You made heaven and earth, how can it be said that You were not at work? If there was time, You made it,

for time could not pass before You made time. On the other hand, if before heaven and earth were made there was no time, then what is meant by the question "What were You doing *then*?" If there was not any time, there was not any "then". . . .

You are the Maker of all time, and before all time You are, nor was there ever a time when there was no time!

Augustine, *Confessions*, XI, 12–13

- 19 If we conceive of some point of time which cannot be divided into even the minutest parts of moments, that is the only point that can be called present: and that point flees at such lightning speed from being future to being past, that it has no extent of duration at all.

Augustine, *Confessions*, XI, 15

- 20 If the future and the past exist, I want to know where they are. And if I cannot yet know this, at least I do know that wherever they are, they are there not as future or past, but present. If wherever they are they are future, then in that place they are not yet; if past, then they are there no more. Thus wherever they are and whatever they are, they *are* only as present. When we relate the past truly, it is not the things themselves that are brought forth from our memory—for these have passed away: but words conceived from the images of the things: for the things stamped their prints upon the mind as they passed through it by way of the senses. Thus for example my boyhood, which no longer exists, is in time past, which no longer exists; but the likeness of my boyhood, when I recall it and talk of it, I look upon in time present, because it is still present in my memory.

Augustine, *Confessions*, XI, 18

- 21 Whatever may be the mode of this mysterious foreseeing of things to come, unless the thing is it cannot be seen. But what now is, is not future but present. Therefore when we speak of seeing the future, obviously what is seen is not the things which are not yet because they are still to come, but their causes or perhaps the signs that foretell them, for these causes and signs do exist here and now. Thus to those who see them now, they are not future but present, and from them things to come are conceived by the mind and foretold. These concepts already exist, and those who foretell are gazing upon them, present within themselves.

Augustine, *Confessions*, XI, 18

- 22 At any rate it is now quite clear that neither future nor past actually exists. Nor is it right to say there are three times, past, present and future. Perhaps it would be more correct to say: there are three times, a present of things past, a present of things present, a present of things future. For

these three exist in the mind, and I find them nowhere else: the present of things past is memory, the present of things present is sight, the present of things future is expectation.

Augustine, *Confessions*, XI, 20

- 23 Where does time come from, and by what way does it pass, and where does it go, while we are measuring it? Where is it from?—obviously from the future. But what way does it pass?—by the present. Where does it go?—into the past. In other words it passes from that which does not yet exist, by way of that which lacks extension, into that which is no longer.

Augustine, *Confessions*, XI, 21

- 24 I confess to You, Lord, that I still do not know what time is. And again I confess to You, Lord, that I know that I am uttering these things in time: I have been talking of time for a long time, and this long time would not be a long time unless time had passed. But how do I know this, since I do not know what time is? Or perhaps I do know, but simply do not know how to express what I know. Alas for me, I do not even know what I do not know!

Augustine, *Confessions*, XI, 25

- 25 If eternity and time are rightly distinguished by this, that time does not exist without some movement and transition, while in eternity there is no change, who does not see that there could have been no time had not some creature been made, which by some motion could give birth to change—the various parts of which motion and change, as they cannot be simultaneous, succeed one another—and thus, in these shorter or longer intervals of duration, time would begin? Since then, God, in Whose eternity is no change at all, is the Creator and Ordainer of time, I do not see how He can be said to have created the world after spaces of time had elapsed, unless it be said that prior to the world there was some creature by whose movement time could pass.

Augustine, *City of God*, XI, 6

- 26 We can reasonably say there was a time when Rome was not; there was a time when Jerusalem was not; there was a time when Abraham was not; there was a time when man was not, and so on: in fine, if the world was not made at the commencement of time, but after some time had elapsed, we can say there was a time when the world was not. But to say there was a time when time was not, is as absurd as to say there was a man when there was no man; or, this world was when this world was not.

Augustine, *City of God*, XII, 15

- 27 It is manifest that time and eternity are not the same. Some have founded the nature of this differ-

ence on the fact that eternity lacks beginning and end, whereas time has a beginning and an end. This, however, is an accidental and not an absolute difference, because, granted that time always was and always will be, according to the idea of those who think the movement of the heavens goes on for ever, there would yet remain a difference between eternity and time . . . arising from the fact that eternity is simultaneously whole, which cannot be applied to time; for eternity is the measure of a permanent being, while time is the measure of movement.

Supposing, however, that this difference be considered on the part of the things measured, and not as regards the measures, then there is another reason for it, since that alone is measured by time which has beginning and end in time. . . . Hence, if the movement of the heavens lasted always, time would not be its measure as regards the whole of its duration, since the infinite is not measurable; but it would measure any revolution whatsoever which has beginning and end in time.

Aquinas, *Summa Theologica*, I, 10, 4

- 28 As eternity is the proper measure of being itself, so time is the proper measure of movement; and hence, according as any being recedes from permanence of being, and undergoes change, it recedes from eternity, and is subject to time. Therefore the being of things corruptible, because it is changeable, is not measured by eternity, but by time; for time measures not only things actually changed, but also things changeable. Hence it not only measures movement, but it also measures repose, which belongs to whatever is naturally movable, but is not actually in motion.

Aquinas, *Summa Theologica*, I, 10, 4

- 29 In time there is something indivisible—namely, the instant; and there is something else which endures—namely, time. But in eternity the indivisible now stands always still.

Aquinas, *Summa Theologica*, I, 42, 2

- 30 Even supposing that the world always was, it would not be equal to God in eternity . . . because the divine Being is all being simultaneously without succession; but with the world it is otherwise.

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

- 31 *Beatrice*. The nature of the universe which stilleth the centre and moveth all the rest around, hence doth begin as from its starting point.

And this heaven hath no other *where* than the divine mind wherein is kindled the love which rolleth it and the power which it sheddeth.

Light and love grasp it in one circle, as doth it the others, and this engirdment he only who doth gird it understandeth.

Its movement by no other is marked out; but by it

- all the rest are measured, as ten by half and fifth.
And how 'Time in this same vessel hath its roots,
and in the rest its leaves, may now be manifest
to thee.
Dante, *Paradiso*, XXVII, 106
- 32 And well may Seneca, and many more,
Bewail lost time far more than gold in store.
'For chattels lost may yet recovered be,
But time lost ruins us for aye,' says he.
It will not come again, once it has fled,
Not any more than will Mag's maidenhead
When she has lost it in her wantonness;
Let's not grow mouldy thus in idleness.
Chaucer, *Canterbury Tales*. Man of Law's
Prologue, Intro.
- 33 What really *is*? That which is eternal: that is to
say, what never had birth, nor will ever have an
end; to which time never brings any change. For
time is a mobile thing, which appears as in a
shadow, together with matter, which is ever run-
ning and flowing, without ever remaining stable
or permanent. To which belong the words *before*
and *after*, and *has been* or *will be*, which at the very
first sight show very evidently that time is not a
thing that *is*; for it would be a great stupidity and
a perfectly apparent falsehood to say that that *is*
which is not yet in being, or which already has
ceased to be. And as for these words, *present*, *imme-*
diately, *now*, on which it seems that we chiefly found
and support our understanding of time, reason
discovering this immediately destroys it; for she at
once splits and divides it into future and past, as
though wanting to see it necessarily divided in
two.
The same thing happens to nature that is mea-
sured, as to time that measures it. For there is
nothing in it either that abides or is stable: but all
things in it are either born, or being born, or
dying. For which reason it would be a sin to say of
God, who is the only one that *is*, that he *was* or
will be. For those terms represent declinings, tran-
sitions, or vicissitudes of what cannot endure or
remain in being. Wherefore we must conclude
that God alone *is*—not at all according to any
measure of time, but according to an eternity im-
mutable and immobile, not measured by time or
subject to any decline; before whom there is noth-
ing, nor will there be after, nor is there anything
more new or more recent; but one who really *is*—
who by one single *now* fills the *ever*; and there is
nothing that really *is* but he alone—nor can we
say "He has been," or "He will be"—without be-
ginning and without end.
Montaigne, *Essays*, II, 12, Apology
for Raymond Sebond
- 34 Goe to my love, where she is carelesse layd,
Yet in her winters bowre, not well awake;
Tell her the joyous time will not be staid,
- Unless she doe him by the forelock take.
Spenser, *Amoretti*, LXX
- 35 *King Richard*. I wasted time, and now doth time
waste me.
Shakespeare, *Richard II*, V, v, 49
- 36 *The Bastard*. Old Time the clock-setter, that bald
sexton Time,
Is it as he will?
Shakespeare, *King John*, III, i, 324
- 37 *Jaques*. He drew a dial from his poke,
And, looking on it with lack-lustre eye,
Says very wisely, "It is ten o'clock:
Thus we may see," quoth he, "how the world
wags:
'Tis but an hour ago since it was nine,
And after one hour more 'twill be eleven;
And so, from hour to hour, we ripe and ripe,
And then, from hour to hour, we rot and rot;
And thereby hangs a tale."
Shakespeare, *As You Like It*, II, vii, 20
- 38 *Rosalind*. Time travels in divers paces with divers
persons. I'll tell you who Time ambles withal, who
Time trots withal, who Time gallops withal, and
who he stands still withal.
Shakespeare, *As You Like It*, III, ii, 326
- 39 *Cloven*. The whirligig of time brings in his reveng-
es.
Shakespeare, *Twelfth Night*, V, i, 385
- 40 *Hector*. The end crowns all,
And that old common arbitrator, Time,
Will one day end it.
Shakespeare, *Troilus and Cressida*, IV, v, 224
- 41 *Macbeth*. Come what come may,
Time and the hour runs through the roughest
day.
Shakespeare, *Macbeth*, I, iii, 146
- 42 *Prospero*. How is it
That this lives in thy mind? What seest thou else
In the dark backward and abysm of time?
Shakespeare, *Tempest*, I, ii, 48
- 43 Devouring Time, blunt thou the lion's paws,
And make the earth devour her own sweet brood;
Pluck the keen teeth from the fierce tiger's jaws,
And burn the long-lived phoenix in her blood.
Shakespeare, *Sonnet XIX*
- 44 The present time has no causal dependence on
the time immediately preceding it. Hence, in or-
der to secure the continued existence of a thing,
no less a cause is required than that needed to
produce it at the first.
Descartes, *Arguments Demonstrating the
Existence of God and the Distinction
Between Soul and Body*, Axiom 2

- 45 Restless inquietude for the diuturnity of our memories unto present considerations seems a vanity almost out of date, and superannuated piece of folly. We cannot hope to live so long in our names as some have done in their persons; one face of Janus holds no proportion unto the other. 'Tis too late to be ambitious. The great mutations of the world are acted, or time may be too short for our designs. To extend our memories by monuments, whose death we daily pray for, and whose duration we cannot hope, without injury to our expectations in the advent of the last day, were a contradiction to our beliefs. We whose generations are ordained in this setting part of time are providentially taken off from such imaginations; and, being necessitated to eye the remaining particle of futurity, are naturally constituted unto thoughts of the next world, and cannot excusably decline the consideration of that duration, which maketh pyramids pillars of snow, and all that's past a moment.
- Sir Thomas Browne, *Urn-Burial*, V
- 46 Oblivion is not to be hired: the greater part must be content to be as though they had not been, to be found in the register of God, not in the record of man. Twenty-seven names make up the first story, and the recorded names ever since contain not one living century. The number of the dead long exceedeth all that shall live. The night of time far surpasseth the day, and who knows when was the equinox? Every hour adds unto that current arithmetic, which scarce stands one moment. And since death must be the Lucina of life, and even pagans could doubt whether thus to live were to die; since our longest sun sets at right descensions, and makes but winter arches, and therefore it cannot be long before we lie down in darkness, and have our light in ashes; since the brother of death daily haunts us with dying mementos, and time that grows old in itself bids us hope no long duration; diuturnity is a dream and folly of expectation.
- Sir Thomas Browne, *Urn-Burial*, V
- 47 Time heals griefs and quarrels, for we change and are no longer the same persons.
- Pascal, *Pensées*, II, 122
- 48 Fly envious *Time*, till thou run out thy race,
 Call on the lazy leaden-stepping hours,
 Whose speed is but the heavy Plummets pace;
 And glut thy self with what thy womb devours,
 Which is no more then what is false and vain,
 And meerly mortal dross;
 So little is our loss,
 So little is thy gain.
- Milton, *On Time*
- 49 By eternity, I understand existence itself, so far as it is conceived necessarily to follow from the definition alone of the eternal thing.
- Spinoza, *Ethics*, I, Def. 8
- 50 Duration is the indefinite continuation of existence.
- Spinoza, *Ethics*, II, Def. 5
- 51 Eternity cannot be defined by time, or have any relationship to it.
- Spinoza, *Ethics*, V, Prop. 23, Schol.
- 52 If we look at the common opinion of men, we shall see that they are indeed conscious of the eternity of their minds, but they confound it with duration, and attribute it to imagination or memory, which they believe remain after death.
- Spinoza, *Ethics*, V, Prop. 34, Schol.
- 53 Absolute, true, and mathematical time, of itself, and from its own nature, flows equably without relation to anything external, and by another name is called duration: relative, apparent, and common time, is some sensible and external (whether accurate or unequable) measure of duration by the means of motion, which is commonly used instead of true time; such as an hour, a day, a month, a year.
- Newton, *Principia*, Definitions, Scholium
- 54 It may be, that there is no such thing as an equable motion, whereby time may be accurately measured. All motions may be accelerated and retarded, but the flowing of absolute time is not liable to any change. The duration of perseverance of the existence of things remains the same, whether the motions are swift or slow, or none at all: and therefore this duration ought to be distinguished from what are only sensible measures thereof.
- Newton, *Principia*, Definitions, Scholium
- 55 One thing seems strange to me,—that whilst all men manifestly measured time by the motion of the great and visible bodies of the world, time yet should be defined to be the “measure of motion”: whereas it is obvious to every one who reflects ever so little on it, that to measure motion, space is as necessary to be considered as time; and those who look a little farther will find also the bulk of the thing moved necessary to be taken into the computation, by any one who will estimate or measure motion so as to judge right of it. Nor indeed does motion any otherwise conduce to the measuring of duration, than as it constantly brings about the return of certain sensible ideas, in seeming equidistant periods. For if the motion of the sun were as unequal as of a ship driven by unsteady winds, sometimes very slow, and at others irregularly very swift; or if, being constantly equally swift, it yet was not circular, and produced not the

same appearances,— it would not at all help us to measure time, any more than the seeming unequal motion of a comet does.

Locke, *Concerning Human Understanding*,
Bk. II, XIV, 22

- 56 Having frequently in our mouths the name Eternity, we are apt to think we have a positive comprehensive idea of it, which is as much as to say, that there is no part of that duration which is not clearly contained in our idea. It is true that he that thinks so may have a clear idea of duration; he may also have a clear idea of a very great length of duration; he may also have a clear idea of the comparison of that great one with still a greater: but it not being possible for him to include in his idea of any duration, let it be as great as it will, *the whole extent together of a duration, where he supposes no end*, that part of his idea, which is still beyond the bounds of that large duration he represents to his own thoughts, is very obscure and undetermined. And hence it is that in disputes and reasonings concerning eternity, or any other infinite, we are very apt to blunder, and involve ourselves in manifest absurdities.

Locke, *Concerning Human Understanding*,
Bk. II, XXIX, 15

- 57 Whenever I attempt to frame a simple idea of *time*, abstracted from the succession of ideas in my mind, which flows uniformly and is participated by all beings, I am lost and embroiled in inextricable difficulties. I have no notion of it at all, only I hear others say it is infinitely divisible, and speak of it in such a manner as leads me to enter-tain odd thoughts of my existence; since that doctrine lays one under an absolute necessity of thinking, either that he passes away innumerable ages without a thought, or else that he is annihilated every moment of his life, both which seem equally absurd. Time therefore being nothing, abstracted from the succession of ideas in our minds, it follows that the duration of any finite spirit must be estimated by the number of ideas or actions succeeding each other in that same spirit or mind. Hence, it is a plain consequence that the soul always thinks; and in truth whoever shall go about to divide in his thoughts, or abstract the *existence* of a spirit from its *cogitation*, will, I believe, find it no easy task.

Berkeley, *Principles of Human Knowledge*, 98

- 58 Ever eating, never cloying,
All-devouring, all-destroying,
Never finding full repast,
Till I eat the world at last.

Swift, *On Time*

- 59 No Preacher is listened to but Time, which gives us the same Train and Turn of Thought that eld-

er People have tried in vain to put into our Heads before.

Swift, *Thoughts on Various Subjects*

- 60 'Tis a property inseparable from time, and which in a manner constitutes its essence, that each of its parts succeeds another, and that none of them, however contiguous, can ever be co-existent. For the same reason, that the year 1737 cannot concur with the present year 1738, every moment must be distinct from, and posterior or antecedent to another. 'Tis certain then, that time, as it exists, must be compos'd of indivisible moments. For if in time we could never arrive at an end of division, and if each moment, as it succeeds another, were not perfectly single and indivisible, there would be an infinite number of co-existent moments, or parts of time; which I believe will be allow'd to be an arrant contradiction.

Hume, *Treatise of Human Nature*, Bk. I, II, 2

- 61 To understand what time is aright, without which we never can comprehend infinity, insomuch as one is a portion of the other—we ought seriously to sit down and consider what idea it is we have of duration, so as to give a satisfactory account how we came by it.—What is that to any body? quoth my uncle Toby. For if you will turn your eyes inwards upon your mind, continued my father, and observe attentively, you will perceive, brother, that whilst you and I are talking together, and thinking, and smoking our pipes, or whilst we receive successively ideas in our minds, we know that we do exist, and so we estimate the existence, or the continuation of the existence of ourselves, or any thing else, commensurate to the succession of any ideas in our minds, the duration of ourselves, or any such other thing co-existing with our thinking—and so according to that pre-conceived—You puzzle me to death, cried my uncle Toby.

—'Tis owing to this, replied my father, that in our computations of time, we are so used to minutes, hours, weeks, and months—and of clocks (I wish there was not a clock in the kingdom) to measure out their several portions to us, and to those who belong to us—that 'twill be well, if in time to come, the succession of our ideas be of any use or service to us at all.

Now, whether we observe it or no, continued my father, in every sound man's head, there is a regular succession of ideas of one sort or other, which follow each other in train just like—A train of artillery? said my uncle Toby—A train of a fiddle-stick!—quoth my father—which follow and succeed one another in our minds at certain distances, just like the images in the inside of a lantern turned round by the heat of a candle.—I declare, quoth my uncle Toby, mine are more like a smoke-jack.—Then, brother Toby, I have

nothing more to say to you upon the subject, said my father.

Sterne, *Tristram Shandy*, III, 18

- 62 Time wastes too fast: every letter I trace tells me with what rapidity Life follows my pen; the days and hours of it, more precious, my dear Jenny! than the rubies about thy neck, are flying over our heads like light clouds of a windy day, never to return more—every thing presses on—whilst thou art twisting that lock,—see! it grows grey; and every time I kiss thy hand to bid adieu, and every absence which follows it, are precludes to that eternal separation which we are shortly to make.

Sterne, *Tristram Shandy*, IX, 8

- 63 I was exceedingly uneasy at the awkward appearance I supposed I should make to Johnson and the other gentlemen whom I had invited, not being able to receive them at home, and being obliged to order supper at the Mitre. I went to Johnson in the morning, and talked of it as a serious distress. He laughed, and said, "Consider, Sir, how insignificant this will appear a twelvemonth hence."—Were this consideration to be applied to most of the little vexatious incidents of life, by which our quiet is too often disturbed, it would prevent many painful sensations. I have tried it frequently, with good effect.

Boswell, *Life of Johnson* (July 6, 1763)

- 64 Nae man can tether time or tide.

Burns, *Tam O'Shanter*

- 65 Time is not an empirical conception. For neither coexistence nor succession would be perceived by us, if the representation of time did not exist as a foundation *a priori*. Without this presupposition we could not represent to ourselves that things exist together at one and the same time, or at different times, that is, contemporaneously, or in succession.

Time is a necessary representation, lying at the foundation of all our intuitions. With regard to phenomena in general, we cannot think away time from them, and represent them to ourselves as out of and unconnected with time, but we can quite well represent to ourselves time void of phenomena. Time is therefore given *a priori*. In it alone is all reality of phenomena possible. These may all be annihilated in thought, but time itself, as the universal condition of their possibility, cannot be so annulled.

Kant, *Critique of Pure Reason*,
Transcendental Aesthetic

- 66 The infinity of time signifies nothing more than that every determined quantity of time is possible only through limitations of one time lying at the foundation. Consequently, the original representation, time, must be given as unlimited. But as

the determinate representation of the parts of time and of every quantity of an object can only be obtained by limitation, the *complete* representation of time must not be furnished by means of conceptions, for these contain only partial representations. Conceptions, on the contrary, must have immediate intuition for their basis.

Kant, *Critique of Pure Reason*,
Transcendental Aesthetic

- 67 Time is the formal condition *a priori* of all phenomena whatsoever. Space, as the pure form of external intuition, is limited as a condition *a priori* to external phenomena alone. On the other hand, because all representations, whether they have or have not external things for their objects, still in themselves, as determinations of the mind, belong to our internal state; and because this internal state is subject to the formal condition of the internal intuition, that is, to time—time is a condition *a priori* of all phenomena whatsoever—the *immediate* condition of all internal, and thereby the *mediate* condition of all external phenomena.

Kant, *Critique of Pure Reason*,
Transcendental Aesthetic

- 68 I met a traveller from an antique land
Who said: 'Two vast and trunkless legs of stone
Stand in the desert. Near them, on the sand,
Half sunk, a shattered visage lies, whose frown,
And wrinkled lip, and sneer of cold command,
Tell that its sculptor well those passions read
Which yet survive, stamped on these lifeless
things,
The hand that mocked them and the heart that
fed.

And on the pedestal these words appear—
"My name is Ozymandias, king of kings:
Look on my works, ye Mighty, and despair!"
Nothing beside remains. Round the decay
Of that colossal wreck, boundless and bare
The lone and level sands stretch far away.'

Shelley, *Ozymandias*

- 69 Oh, Time! the beautifier of the dead,
Adorner of the ruin, comforter
And only healer when the heart hath bled—
Time! the corrector where our judgments err,
The test of truth, love,—sole philosopher.

Byron, *Childe Harold's Pilgrimage*, IV, 130

- 70 Time is the negative element in the sensuous world.

Hegel, *Philosophy of History*, Intro., 3

- 71 Length of time is something entirely relative, and the element of spirit is eternity. Duration, properly speaking, cannot be said to belong to it.

Hegel, *Philosophy of History*, Intro.

- 72 Time is that in which all things pass away; it is

merely the form under which the will to live—the thing-in-itself and therefore imperishable—has revealed to it that its efforts are in vain; it is that agent by which at every moment all things in our hands become as nothing, and lose any real value they possess.

Schopenhauer, *Vanity of Existence*

73 A man finds himself, to his great astonishment, suddenly existing, after thousands and thousands of years of non-existence: he lives for a little while; and then, again, comes an equally long period when he must exist no more. The heart rebels against this, and feels that it cannot be true. The crudest intellect cannot speculate on such a subject without having a presentiment that Time is something ideal in its nature. This ideality of Time and Space is the key to every true system of metaphysics; because it provides for quite another order of things than is to be met with in the domain of nature. This is why Kant is so great.

Schopenhauer, *Vanity of Existence*

74 The illimitable, silent, never-resting thing called Time, rolling, rushing on, swift, silent, like an all-embracing ocean-tide, on which we and all the Universe swim like exhalations, like apparitions which *are*, and then *are not*: this is forever very literally a miracle; a thing to strike us dumb.

Carlyle, *The Hero as Divinity*

75 Let us alone. Time driveth onward fast,
And in a little while our lips are dumb.
Let us alone. What is it that will last?
All things are taken from us, and become
Portions and parcels of the dreadful past.

Tennyson, *The Lotus-Eaters*, IV

76 Time is but the stream I go a-fishing in. I drink at it; but while I drink I see the sandy bottom and detect how shallow it is. Its thin current slides away, but eternity remains. I would drink deeper; fish in the sky, whose bottom is pebbly with stars. I cannot count one. I know not the first letter of the alphabet. I have always been regretting that I was not as wise as the day I was born. The intellect is a cleaver; it discerns and rifts its way into the secret of things. I do not wish to be any more busy with my hands than is necessary. My head is hands and feet. I feel all my best faculties concentrated in it. My instinct tells me that my head is an organ for burrowing, as some creatures use their snout and fore paws, and with it I would mine and burrow my way through these hills. I think that the richest vein is somewhere hereabouts; so by the divining-rod and thin rising vapors I judge; and here I will begin to mine.

Thoreau, *Walden: Where I Lived, and What I Lived For*

77 Come, fill the Cup, and in the fire of Spring

Your Winter-garment of Repentance fling;
The Bird of Time has but a little way
To flutter—and the Bird is on the Wing.

FitzGerald, *Rubáiyát*, VII

78 What's time? Leave Now for dogs and apes!
Man has Forever.

Browning, *A Grammarian's Funeral*

79 Time is infinite motion without a moment of rest
and is unthinkable otherwise.

Tolstoy, *War and Peace*, II Epilogue, X

80 The practically cognized present is no knife-edge, but a saddle-back, with a certain breadth of its own on which we sit perched, and from which we look in two directions into time. The unit of composition of our perception of time is a *duration*, with a bow and a stern, as it were—a rearward- and a forward-looking end. It is only as parts of this *duration-block* that the relation of *succession* of one end to the other is perceived. We do not first feel one end and then feel the other after it, and from the perception of the succession infer an interval of time between, but we seem to feel the interval of time as a whole, with its two ends embedded in it. The experience is from the outset a synthetic datum, not a simple one; and to sensible perception its elements are inseparable, although attention looking back may easily decompose the experience, and distinguish its beginning from its end.

William James, *Psychology*, XV

81 In the experience of watching empty time flow . . . we tell it off in pulses. We say "now! now! now!" or we count "more! more! more!" as we feel it bud. This composition out of units of duration is called the law of time's *discrete flow*. The discreteness is, however, merely due to the fact that our successive acts of *recognition* or *apperception* of *what* it is are discrete. The sensation is as continuous as any sensation can be. All continuous sensations are *named* in beats. We notice that a certain finite "more" of them is passing or already past. . . .

After a small number of beats our impression of the amount we have told off becomes quite vague. Our only way of knowing it accurately is by counting, or noticing the cluck, or through some other symbolic conception. When the times exceed hours or days, the conception is absolutely symbolic. We think of the amount we mean either solely as a *name*, or by running over a few salient *dates* therein, with no pretence of imagining the full durations that lie between them. No one has anything like a *perception* of the greater length of the time between now and the first century than of that between now and the tenth. To an historian, it is true, the longer interval will suggest a host of additional dates and events, and so appear a

more *multitudinous* thing. And for the same reason most people will think they directly perceive the length of the past fortnight to exceed that of the past week. But there is properly no comparative time *intuition* in these cases at all. It is but dates and events, *representing* time, their abundance *symbolizing* its length. I am sure that this is so, even where the times compared are no more than an hour or so in length.

William James, *Psychology*, XV

- 82 The specious present, the intuited duration, stands permanent, like the rainbow on the waterfall, with its own quality unchanged by the events that stream through it. Each of these, as it slips out, retains the power of being reproduced; and when reproduced, is reproduced with the duration and neighbors which it originally had. Please observe, however, that the reproduction of an event, *after* it has once completely dropped out of the rearward end of the specious present, is an entirely different psychic fact from its direct perception in the specious present as a thing immediately past. A creature might be entirely devoid of *reproductive* memory, and yet have the time-sense; but the latter would be limited, in his case, to the few seconds immediately passing by. Time older than that he would never recall.

William James, *Psychology*, XV

- 83 We cannot point to a time itself, but only to some event occurring at that time. There is therefore no reason in experience to suppose that there are times as opposed to events: the events, ordered by the relations of simultaneity and succession, are all that experience provides.

Russell, *World of Physics and the World of Sense*

- 84 The contention that time is unreal and that the world of sense is illusory must, I think, be regarded as based upon fallacious reasoning. Nevertheless, there is some sense—easier to feel than to state—in which time is an unimportant and superficial characteristic of reality. Past and future must be acknowledged to be as real as the present, and a certain emancipation from slavery to time is essential to philosophic thought. The importance of time is rather practical than theoretical, rather in relation to our desires than in relation to truth. A truer image of the world, I think, is obtained by picturing things as entering into the stream of time from an eternal world outside, than from a view which regards time as the devouring tyrant of all that is. Both in thought and in feeling, to realize the unimportance of time is the gate of wisdom.

Russell, *Problem of Infinity*

- 85 Most people will be inclined to agree with St. Augustine: "What, then, is time? If no one asks of me, I know; if I wish to explain to him who asks,

I know not." Philosophers, of course, have learned to be glib about time, but the rest of mankind, although the subject feels familiar, are apt to be aware that a few questions can reduce them to hopeless confusion. "Does the past exist? No. Does the future exist? No. Then only the present exists? Yes. But within the present there is no lapse of time? Quite so. Then time does not exist? Oh, I wish you wouldn't be so tiresome." Any philosopher can elicit this dialogue by a suitable choice of interlocuter.

Russell, *Human Knowledge*, IV, 5

- 86 Since Einstein, we know that . . . each piece of matter has its own local time. There is very little difference between the local time of one piece of matter and that of another unless their relative velocity is an appreciable fraction of the velocity of light. The local time of a given piece of matter is that which will be shown by a perfectly accurate chronometer which travels with it. Beta particles travel with velocities that do not fall very far short of that of light. If we could place a chronometer on a beta particle and make the particle travel in a closed path, we should find, when it returned, that the chronometer would not agree with one that had remained throughout stationary in the laboratory. A more curious illustration (which I owe to Professor Reichenbach) is connected with the possibility of travel to the stars. Suppose we invented a rocket apparatus which could send a projectile to Sirius with a velocity ten-elevenths of that of light. From the point of view of the terrestrial observer the journey would take about 55 years, and one might therefore suppose that if the projectile carried passengers who were young when they started, they would be old when they arrived. But from their point of view the journey will only have taken about 11 years. This will not only be the time taken as measured by their clocks, but also the time as measured by their physiological processes—decay of teeth, loss of hair, etc. If they looked and felt like men of 20 when they started, they will look and feel like men of 31 when they arrive. It is only because we do not habitually come across bodies traveling with a speed approaching that of light that such odd facts remain unnoticed except by men of science.

Russell, *Human Knowledge*, IV, 5

- 87 The non-mathematician is seized by a mysterious shuddering when he hears of "four-dimensional" things, by a feeling not unlike that awakened by thoughts of the occult. And yet there is no more common-place statement than that the world in which we live is a four-dimensional space-time continuum.

Space is a three-dimensional continuum. By this we mean that it is possible to describe the position of a point (at rest) by means of three numbers (co-ordinates) x, y, z , and that there is an

indefinite number of points in the neighbourhood of this one, the position of which can be described by co-ordinates such as x_1, y_1, z_1 , which may be as near as we choose to the respective values of the co-ordinates x, y, z of the first point. In virtue of the latter property we speak of a "continuum," and owing to the fact that there are three co-ordinates we speak of it as being "three-dimensional."

Similarly, the world of physical phenomena which was briefly called "world" by Minkowski is naturally four-dimensional in the space-time sense. For it is composed of individual events, each of which is described by four numbers, namely, three space co-ordinates x, y, z and a time co-ordinate, the time-value t . The "world" is in this sense also a continuum; for to every event there are as many "neighbouring" events (realised or at least thinkable) as we care to choose, the co-ordinates x_1, y_1, z_1, t_1 of which differ by an indefinitely small amount from those of the event x, y, z, t originally considered. That we have not been accustomed to regard the world in this sense as a four-dimensional continuum is due to the fact that in physics, before the advent of the theory of relativity, time played a different and more independent rôle, as compared with the space co-ordinates. It is for this reason that we have been in the habit of treating time as an independent continuum. As a matter of fact, according to classical mechanics, time is absolute, *i.e.* it is independent of the position and the condition of motion of the system of co-ordinates. We see this expressed in the last equation of the Galileian transformation ($t' = t$).

The four-dimensional mode of consideration of the "world" is natural on the theory of relativity, since according to this theory time is robbed of its independence.

Einstein, *Relativity*, I, 17

- 88 When I follow with my eyes on the dial of a clock the movement of the hand which corresponds to the oscillations of the pendulum, I do not measure duration, as seems to be thought; I merely count simultaneities, which is very different. Outside of me, in space, there is never more than a single position of the hand and the pendulum, for nothing is left of the past positions. Within myself a process of organization or interpenetration of conscious states is going on, which constitutes true duration. It is because I *endure* in this way that I picture to myself what I call the past oscillations of the pendulum at the same time as I perceive the present oscillation. Now, let us withdraw for a moment the ego which thinks these so-called successive oscillations: there will never be more than a single oscillation, and indeed only a single position, of the pendulum, and hence no duration. Withdraw, on the other hand, the pendulum and its oscillations; there will no longer be anything but the heterogeneous duration of the ego, with-

out moments external to one another, without relation to number.

Bergson, *Time and Free Will*, II

- 89 To announce that something will take place at the end of a time t is to declare that consciousness will note between now and then a number t of simultaneities of a certain kind. And we must not be led astray by the words "between now and then," for the interval of duration exists only for us and on account of the interpenetration of our conscious states. Outside ourselves we should find only space, and consequently nothing but simultaneities, of which we could not even say that they are objectively successive, since succession can only be thought through *comparing* the present with the past.—That the interval of duration itself cannot be taken into account by science is proved by the fact that, if all the motions of the universe took place twice or thrice as quickly, there would be nothing to alter either in our formulae or in the figures which are to be found in them. Consciousness would have an indefinable and as it were qualitative impression of the change, but the change would not make itself felt outside consciousness, since the same number of simultaneities would go on taking place in space.

Bergson, *Time and Free Will*, II

- 90 What precisely is the present? If it is a question of the present instant,—I mean, of a mathematical instant which would be to time what the mathematical point is to the line,—it is clear that such an instant is a pure abstraction, an aspect of the mind; it cannot have real existence. You could never create time out of such instants any more than you could make a line out of mathematical points. Even if it does exist, how could there be an instant anterior to it? The two instants could not be separated by an interval of time since, by hypothesis, you reduce time to a juxtaposition of instants. Therefore they would not be separated by anything, and consequently they would be only one: two mathematical points which touch are identical.

Bergson, *The Creative Mind*, V

- 91 By physical time I understand an order of derivation integral to the flux of matter: so that if two worlds had no material connection, and neither was in any of its parts derived from the other, they could not possibly have positions in the same physical time. The same essence of succession might be exhibited in both; the same kind of temporal vistas might perplex the sentimental inhabitants of each of them; but no date in one would coincide with a date in the other, nor would their respective temporal scales and rates of precipitation have any common measure.

The notion that there is and can be but one time, and that half of it is always intrinsically past

and the other half always intrinsically future, belongs to the normal pathology of an animal mind: it marks the egotistical outlook of an active being endowed with imagination. Such a being will project the moral contrast produced by his momentary absorption in action upon the conditions and history of that action, and upon the universe at large. A perspective of hope and one of reminiscence continually divide for him a specious eternity; and for him the dramatic center of existence, though always at a different point in physical time, will always be precisely in himself.

Santayana, *Realm of Matter*, IV

- 92 Sentimental time is a genuine, if poetical, version of the march of existence, even as pictorial space is a genuine, if poetical, version of its distribution. The views taken are short, especially towards the future, but being extensible they suggest well enough the unfathomable depths of physical time in both directions; and if the views, being views, must be taken from some arbitrary point, they may be exchanged for one another, thus annulling the bias of each, in so far as the others contradict it. I am far from wishing to assert that the remainder or resultant will be the essence of physical time; but for human purposes a just view enough is obtained if we remember that each *now* and *here* is called so only by one voice, and that all other voices call it a *then* and a *there* . . .

The least sentimental term in sentimental time is the term *now*, because it marks the junction of fancy with action. *Now* is often a word of command; it leans towards the future, and seems to be the voice of the present summoning the next moment to arise, and pouncing upon it when it does so. For *now* has in it emotionally all the cheeriness of material change: it comes out of the past as if impatient at not having come sooner, and it passes into the future with alacrity, as if confident of losing nothing by moving on. For it is evident that actual succession can contain nothing but *nows*, so that *now* in a certain way is immortal. But this immortality is only a continual reiteration, a series of moments each without self-possession and without assurance of any other moment; so that if ever the *now* loses its indicative practical force and becomes introspective, it becomes acutely sentimental, a perpetual hope unrealised and a perpetual dying.

Santayana, *Realm of Matter*, IV

- 93 October began as months do: their entrance is, in itself, an unostentatious and soundless affair, without outward signs and tokens; they, as it were, steal in softly and, unless you are keeping close

watch, escape your notice altogether. Time has no divisions to mark its passage, there is never a thunder-storm or blare of trumpets to announce the beginning of a new month or year. Even when a new century begins it is only we mortals who ring bells and fire off pistols.

Mann, *Magic Mountain*, V

- 94 If Time is considered by itself, it immediately dissolves into an absolute multiplicity of instants which considered separately lose all temporal nature and are reduced purely and simply to the total a-temporality of the *this*. Thus Time is pure nothingness in-itself, which can seem to have a being only by the very act in which the For-itself overlaps it in order to utilize it. This being, however, is that of a particular figure which is raised on the undifferentiated ground of time and which we call the lapse of time. In fact our first apprehension of objective time is practical: it is while being my possibilities beyond co-present being that I discover objective time as the worldly correlate of nothingness which separates me from my possible. From this point of view time appears as a finite, organized form in the heart of an indefinite dispersion. The lapse of time is the result of a compression of time at the heart of an absolute decompression, and it is the project of ourselves toward our possibilities which realizes the compression. This compression of time is certainly a form of dispersion and of separation, for it expresses in the world the distance which separates me from myself. But on the other hand, since I project myself toward a possible only across an organized series of dependent possibles which are what I have to be in order to—, and since their non-thematic and nonpositional revelation is given in the non-positional revelation of the major possible toward which I project myself, time is revealed to me as an objective, temporal form, as an organized echeloning of probabilities. This objective form or lapse is like the trajectory of my act.

Thus time appears through trajectories. But just as spatial trajectories decompose and collapse into pure static spatiality, so the temporal trajectory collapses as soon as it is not simply lived as that which objectively implies our expectation of ourselves. In fact the probables which are revealed to me tend naturally to be isolated as in-itself probables and to occupy a strictly separated fraction of objective time. Then the lapse of time disappears, and time is revealed as the shimmer of nothingness on the surface of a strictly a-temporal being.

Sartre, *Being and Nothingness*, Pt. II, III, 4