10

Change

INTRODUCTION

From the pre-Socratic physicists and the ancient philosophers to Darwin, Marx, and James—and, later, Bergson, Dewey, and Whitehead—the fact of change has been a major focus of speculative and scientific inquiry.

In antiquity, for the pre-Socratic Heracleitus, nothing was permanent; flux or change was everywhere. This is as true for Bergson in the 20th century as it was for Heracleitus in antiquity. In his view, "reality is mobility . . . only changing states exist. Rest is never more than apparent, or, rather, relative." Similarly, for Whitehead, "Rest is merely a particular case" of "uniform rectilinear motion . . . when the velocity is and remains zero." Twentieth-century scientists confirm what is said by 20th-century philosophers. Heisenberg tells us that "modern physics is in some way extremely near to the doctrines of Heraclitus." While for Heracleitus, fire was at the heart of change, for us it is energy. "Energy may be called the fundamental cause for all change in the world."

Except by Parmenides and his school, the existence of change has never been denied. Nor can it be without rejecting all sense perception as illusory, which is precisely what Zeno's paradoxes seem to do, according to one interpretation of them. But if argument cannot refute the testimony of the senses, neither can reasoning support it. The fact of change, because it is evident to the senses, does not need proof.

That change is, is evident, but *what* change is, is neither evident nor easy to define. What principles or factors are common to every sort of change, how change or becoming is related to permanence or being, what sort of existence belongs to mutable things and to change itself—these are questions to which answers are not obtainable merely by observation. Nor will simple observation, without the aid of experiment, measurement, and mathematical calculation, discover the laws and properties of motion.

The analysis of change or motion has been a problem for the philosophers of nature. They have been concerned with the definition of change, its relation to being, the classification of the kinds of change. The measurement of motion, on the other hand, and the mathematical formulation of its laws have occupied the experimental natural scientists. Both natural philosophy and natural science share a common subject matter, though they approach it by different methods and with different interests. Both are entitled to use the name "physics" for their subject matter.

The Greek word *phüsis* from which "physics" comes has, as its Latin equivalent, the word *natura* from which "nature" comes. In their original significance, both words had reference to the sensible world of changing things, or to its underlying principle—to the ultimate source of change. The physics of the philosopher and the physics of the empirical scientist are alike inquiries concerning the nature of things, not in every respect but in regard to their change and motion. The conclusions of both inquiries have metaphysical implications for the nature of the physical world and for the character of physical existence.

The philosopher draws these implications for being from the study of becoming. The scientist, in turn, draws upon philosophical distinctions in order to define the objects of his study. Galileo, for example, in separating

the problem of freely falling bodies from the motion of projectiles, employs the traditional philosophical distinction between natural and violent motion. The analysis of time and space (basic variables in Newtonian mechanics), the distinction between discontinuous and continuous change, and the problem of the divisibility of a continuous motion—these are philosophical considerations presupposed by the scientific measurement of motion.

WE HAVE SO FAR used the words "change" and "motion," as well as "becoming," as if all three were interchangeable in meaning. That is somewhat inaccurate, even for the ancients who regarded all kinds of change except one as motions; it is much less accurate for the moderns who have tended to restrict the meaning of "motion" to local motion or change of place. It is necessary, therefore, to examine briefly the kinds of change and to indicate the problems which arise with these distinctions.

In his physical treatises, Aristotle distinguishes four kinds of change. "When the change from contrary to contrary is *in quantity,*" he writes, "it is 'growth and diminution'; when it is *in place,* it is 'motion'; when it is . . . *in quality,* it is 'alteration'; but when nothing persists of which the resultant is a property (or an 'accident' in any sense of the term), it is 'coming to be,' and the converse change is 'passing away.' " Aristotle also uses other pairs of words—"generation" and "corruption," "becoming" and "perishing"—to name the last kind of change.

Of the four kinds of change, only the last is not called "motion." But in the context of saying that "becoming cannot be a motion," Aristotle also remarks that "every motion is a kind of change." He does not restrict the meaning of motion to change in place, which is usually called "local motion" or "locomotion." There are, then, according to Aristotle's vocabulary, three kinds of motion: (1) local motion, in which bodies change from place to place; (2) alteration or qualitative motion, in which bodies change with respect to such attributes as color, texture, or temperature; (3) increase and decrease, or quantitative motion, in which bodies change in size. And, in addition, there is the one kind of change which is not motion—generation and corruption. This consists in the coming to be or passing away of a body which, while it has being, exists as an individual substance of a certain sort.

Becoming and perishing are most readily exemplified by the birth and death of living things, but Aristotle also includes the transformation of water into ice or vapor as examples of generation and corruption. One distinctive characteristic of generation and corruption, in Aristotle's conception of this type of change, is their instantaneity. He thinks that the other three kinds of change are continuous processes, taking time, whereas things come into being or pass away instantaneously. Aristotle thus applies the word "motion" only to the continuous changes which time can measure. He never says that time is the measure of change, but only of motion.

But the contrast between the one mode of change which is not motion and the three kinds of motion involves more than this difference with regard to time and continuity. Aristotle's analysis considers the subject of change—that which undergoes transformation—and the starting point and goal of motion. "Every motion," he says, "proceeds from something and to something, that which is directly in motion being distinct from that to which it is in motion and that from which it is in motion; for instance, we may take the three things 'wood,' 'hot,' and 'cold,' of which the first is that which is in motion, the second is that which to which the motion proceeds, and the third is that from which it proceeds."

In the alteration which occurs when the wood changes quality, just as in the increase or decrease which occurs with a body's change in quantity and in the local motion which occurs with a body's change of place, *that which changes* persists throughout the change as the same kind of substance. The wood does not cease to be wood when it becomes hot or cold; the stone does not cease to be a stone when it rolls from here to there, or the organism an animal of a certain kind when it grows in size. In all these cases, "the substratum"—that which is the subject of change—"persists and changes in its own properties . . . The body,

although persisting as the same body, is now healthy and now ill; and the bronze is now spherical and at another time angular, and yet remains the same bronze."

Because the substance of the changing thing remains the same while changing in its properties—*i.e.*, in such attributes or accidents as quality, quantity, and place—Aristotle groups the three kinds of motion together as *accidental change*. The changing thing does not come to be or pass away absolutely, but only in a certain respect. In contrast, generation and corruption involve a change in the very substance of a thing. "When nothing perceptible persists in its identity as a substratum, and the thing changes as a whole," then, according to Aristotle, "it is a coming-to-be of one substance, and the passing-away of another."

In such becoming or perishing, it is matter itself rather than a body or a substance which is tranformed. Matter takes on or loses the form of a certain kind of substance. For example, when the nutriment is assimilated to the form of a living body, the bread or corn becomes the flesh and blood of a man. When an animal dies, its body decomposes into the elements of inorganic matter. Because it is a change of substance itself, Aristotle calls the one kind of change which is not motion *substantial change*, and speaks of it as "a coming-to-be or passing-away simply"—that is, not in a certain respect, but absolutely or "without qualification."

These distinctions are involved in a long tradition of discussion and controversy. They cannot be affirmed or denied without opposite sides being taken on the fundamental issues concerning substance and accident, matter and form, and the causes of change or motion. The adoption or rejection of these distinctions affects one's view of the difference between inorganic and organic change, and the difference between the motions of matter and the changes which take place in mind. The statement of certain problems is determined accordingly; as, for example, the problem of the transmutation of the elements, which persists in various forms from the physics of the ancients through medieval alchemy and the beginnings of modern chemistry to present considerations of radioactivity and atomic fission.

SINCE THE 17TH CENTURY, motion has been identified with local motion. "I can conceive no other kind" of motion, Descartes writes, "and do not consider that we ought to conceive any other in nature." As it is expressed "in common parlance," motion, he says, "is nothing more than the *action by which any body passes from one place to another.*"

This can hardly be taken to mean that change of place is the only observable type of change. That other kinds of change are observable cannot be denied. The science of mechanics or dynamics may be primarily or exclusively concerned with local motions, but other branches of natural science, certainly chemistry, deal with qualitative transformations; and the biological sciences study growth and decay, birth and death.

The emphasis on local motion as the only kind of motion, while it does not exclude apparent changes of other sorts, does raise a question about their reality. The question can be put in several ways. Are the various *apparently* different kinds of change *really* distinct, or can they all be reduced to aspects of one underlying mode of change which is local motion? Even supposing that the kinds of change are not reducible to one another, is local motion primary in the sense that it is involved in all the others?

When mechanics dominates the physical sciences (as has been so largely the case in modern times), there is a tendency to reduce all the observable diversity of change of various appearances of local motion. Newton, for example, explicitly expresses this desire to formulate all natural phenomena in terms of the mechanics of moving particles. In the Preface to the first edition of his *Mathematical Principles*, after recounting his success in dealing with celestial phenomena, he says, "I wish we could derive the rest of the phenomena of Nature by the same kind of reasoning from mechanical principles, for I am induced by many reasons to suspect that they may all depend upon certain forces by which the particles of bodies, by some causes hitherto unknown, are

either mutually impelled towards one another, and cohere in regular figures, or are repelled and recede from one another."

The notion that all change can be reduced to the results of local motion is not, however, of modern origin. Lucretius expounds the theory of the Greek atomists that all the phenomena of change can be explained by reference to the local motion of indivisible particles coming together and separating. Change of place is the only change which occurs on the level of the ultimate physical reality. The atoms neither come to be nor pass away, nor change in quality or size.

But though we find the notion in ancient atomism, it is only in modern physics that the emphasis upon local motion tends to exclude all other kinds of change. It is characteristic of what William James calls "the modern mechanico-physical philosophy" to begin "by saying that the *only* facts are collocations and motions of primordial solids, and the only laws the changes of motion which changes in collocation bring." James quotes Hermann von Helmholtz to the effect that "the ultimate goal of theoretic physics is to find the last *unchanging* causes of the processes of Nature." If, to this end, "we imagine the world composed of elements with unalterable qualities," then, Helmholtz continues, "the only changes that can remain in such a world are spatial changes, *i.e.,* movements, and the only outer relations which can modify the action of the forces are spatial too, or, in other words, the forces are motor forces dependent for their effect on spatial relations."

In the history of physics, Aristotle represents the opposite view. No one of the four kinds of change which he distinguishes has for him greater physical reality than the others. Just as quality cannot be reduced to quantity, or either of these to place, so in his judgment the motions associated with these terms are irreducible to one another. Yet Aristotle does assign to local motion a certain primacy. "Motion in its most general and primary sense," he writes, "is change of place, which we call locomotion." He does not mean merely that this is the primary sense of the word, but rather that no other kind of motion can occur without local motion being somehow involved in the process. Showing how increase and decrease depends on alteration, and how that in turn depends on change of place, he says that "of the three kinds of motion . . . it is this last, which we call locomotion, that must be primary."

THE SHIFT IN MEANING of the word "motion" would not by itself mark a radical departure in the theory of change, but it is accompanied by a shift in thought which has the most radical consequences. At the same time that motion is identified with local motion, Descartes conceives motion as something completely actual and thoroughly intelligible. For the ancients, becoming of any sort had both less reality and less intelligibility than being.

Aristotle had defined motion as the actuality of that which is potential in a respect in which it is still potential to some degree. According to what Descartes calls its strict as opposed to its popular meaning, motion is "the transference of one part of matter or one body from the vicinity of those bodies that are in immediate contact with it, and which we regard as in repose, into the vicinity of others." This definition—contrasted with the Aristotelian conception which it generally supersedes in the subsequent tradition of natural science—is as revolutionary as the Cartesian analytic geometry is by comparison with the Euclidean. Nor is it an unconnected fact that analytic geometry prepares the way for the differential calculus that is needed to measure variable motions, their velocities, and their accelerations.

The central point on which the two definitions are opposed constitutes one of the most fundamental issues in the philosophy of nature. Does motion involve a transition from potential to actual existence, or only the substitution of one actual state for another—only a "transportation," as Descartes says, from one place to another?

While motion is going on, the moving thing, according to Aristotle's definition, must be partly potential and partly actual in the same respect. The leaf turning red, *while it is altering,* has not yet fully reddened. When

it becomes as red as it can get, it can no longer change in that respect. Before it began to change, it was actually green; and since it could become red, it was potentially red. But while the change is in process, the potentiality of the leaf to become red is being actualized. This actualization progresses until the change is completed.

The same analysis would apply to a ball in motion. Until it comes to rest in a given place, its potentiality for being there is undergoing progressive actualization. In short, motion involves some departure from pure potentiality in a given respect, and never complete attainment of full actuality in that same respect. When there is no departure from potentiality, motion has not yet begun; when the attainment of actuality is complete, the motion has terminated.

The Aristotelian definition of motion is the object of much ridicule in the 17th century. Repeating the phrasing which had become traditional in the schools—"the actualization of what exists in potentiality, in so far as it is potential"—Descartes asks: "Now who understands these words? And who at the same time does not know what motion is? Will not everyone admit that those philosophers have been trying to find a knot in a bulrush?" Locke also finds it meaningless. "What more exquisite jargon could the wit of man invent than this definition . . . which would puzzle any rational man to whom it was not already known by its famous absurdity, to guess what word it could ever be supposed to be the explication of. If Tully, asking a Dutchman what *beweeginge* was," Locke continues, "should have received this explication in his own language, that it was *actus entis in potentia quatenus in potentia;* I ask whether any one can imagine he could thereby have guessed what the word *beweeginge* signified?"

Locke does not seem to be satisfied with any definition of motion. "The atomists, who define motion to be 'a passage from one place to another,' what do they more than put one synonymous word for another? For what is *passage* other than *motion?* . . . Nor will 'the successive application of the superficies of one body to those of another,' which the Cartesians give us, prove a much better definition of motion, when well examined." But though Locke rejects the definition of the atomists and the Cartesians on formal grounds, he accepts their idea of motion as simply change of place; whereas he dismisses the Aristotelian definition as sheer absurdity and rejects the idea that motion or change necessarily involves a potentiality capable of progressive fulfillment.

As we have already remarked, the omission of potentiality from the conception of motion is a theoretical shift of the deepest significance. It occurs not only in Descartes's *Principles of Philosophy* and in the atomism of Hobbes and Pierre Gassendi, but also in the mechanics of Galileo and Newton. According to these modern philosophers and scientists, a moving body is *always actually* somewhere. It occupies a different place at every moment in a continuous motion. The motion can be described as the successive occupation by the body of different places at different times. Though all the parts of the motion do not coexist, the moving particle is completely actual throughout. It loses no reality and gains none in the course of the motion, since the various positions the body occupies lie totally outside its material nature. It would, of course, be more difficult to analyze alteration in color or biological growth in these terms, but it must be remembered that efforts have been made to apply such an analysis through the reduction of all other modes of change to local motion.

The principle of inertia, first discerned by Galileo, is critically relevant to the issue between these two conceptions of motion. It is stated by Newton as the first of his "axioms or laws of motion." "Every body," he writes, "continues in its state of rest, or of uniform motion in a right line, unless it is compelled to change that state by forces impressed upon it." As applied to the motion of projectiles, the law declares that they "continue in their motions, so far as they are not retarded by the resistance of air, or impelled downwards by the force of gravity."

In his experimental reasoning concerning the acceleration of bodies moving down inclined planes, Galileo argues that a body

which has achieved a certain velocity on the descent would, if it then proceeded along a horizontal plane, continue infinitely at the same velocity—except for the retardation of air resistance and friction. "Any velocity once imparted to a moving body," he maintains, "will be rigidly maintained as long as the external causes of acceleration or retardation are removed." So in the case of projectiles, they would retain the velocity and direction imparted to them by the cannon, were it not for the factors of gravity and air resistance. Bodies actually in motion possess their motion in themselves as a complete actuality. They need no causes acting on them to keep them in motion, but only to change their direction or bring them to rest.

The motion of projectiles presents a difficulty for the theory which describes all motion as a reduction of potency to act. "If everything that is in motion, with the exception of things that move themselves, is moved by something else, how is it," Aristotle asks, "that some things, *e.g.*, things thrown, continue to be in motion when their movent [moving cause] is no longer in contact with them?" This is a problem for Aristotle precisely because he supposes that the moving cause must act on the thing being moved throughout the period of the motion. For the potentiality to be progressively reduced to actuality, it must be continuously acted upon.

Aristotle's answer postulates a series of causes so that contact can be maintained between the projectile and the moving cause. "The original movent," he writes, "gives the power of being a movent either to air or to water or to something else of the kind, naturally adapted for imparting and undergoing motion . . . The motion begins to cease when the motive force produced in one member of the consecutive series is at each stage less than that possessed by the preceding member, and it finally ceases when one member no longer causes the next member to be a movent but only causes it to be in motion." It follows that inertia must be denied by those who hold that a moving body *always* requires a mover; or even that a body cannot sustain itself in motion beyond a point proportionate to the quantity of the impressed force which originally set it in motion.

FOR THE ANCIENTS, the basic contrast between being and becoming (or between the permanent and the changing) is a contrast between the intelligible and the sensible. This is most sharply expressed in Plato's distinction between the sensible realm of material things and the intelligible realm of ideas. "What is that which always is and has no becoming." Timaeus asks; "and what is that which is always becoming and never is?" He answers his own question by saying that "that which is apprehended by intelligence and reason is always in the same state; but that which is conceived by opinion with the help of sensations and without reason, is always in a process of becoming and perishing, and never really is."

Even though Aristotle differs from Plato in thinking that change and the changing can be objects of scientific knowledge, he, too, holds becoming to be less intelligible than being, precisely because change necessarily involves potentiality. Yet becoming can be understood to the extent that we can discover the principles of its being—the unchanging principles of change. "In pursuing the truth," Aristotle remarks—and this applies to the truth about change as well as everything else—"one must start from the things that are always in the same state and suffer no change."

For Aristotle, change is intelligible through the three elements of permanence which are its principles: (1) the enduring substratum of change, and the contraries—(2) that to which, and (3) that from which, the change takes place. The same principles are sometimes stated to be (1) matter, (2) form, and (3) privation; the matter or substratum being that which both lacks a certain form and has a definite potentiality for possessing it. Change occurs when the matter undergoes a transformation in which it comes to have the form of which it was deprived by the possession of a contrary form.

Neither of the contrary forms changes. Only the thing composite of matter and form changes with respect to the forms of its matter. Hence these principles of change are

themselves unchanging. Change takes place *through*, not *in*, them. As constituents of the changing thing, they are the principles of its mutable being, principles of its *being* as well of its being *mutable*.

The explanation of change by reference to what does not change seems to be common to all theories of becoming. Lucretius, as we have already seen, explains the coming to be and passing away of all other things by the motions of atoms which neither come to be nor pass away. The eternity of the atoms underlies the mutability of everything else.

Yet the atoms are not completely immutable. They move forever through the void which, according to Lucretius, is required for their motion. Their local motion is, moreover, an actual property of the atoms. For them, *to be* is *to be in motion*. Here then, as in the Cartesian theory, no potentiality is involved, and motion is completely real and completely intelligible.

THE NOTIONS OF time and eternity are inseparable from the theory of change or motion. As the chapters on TIME and SCIENCE indicate, local motion involves the dimensions of space as well as time, but all change requires time, and time itself is inconceivable apart from change or motion. Furthermore, as appears in the chapters on TIME and ETERNITY, the two fundamentally opposed meanings of eternity differ according to whether they imply endless change or absolute changelessness.

Eternity is sometimes identified with infinite time. It is in this sense that Plato, in the *Timaeus*, refers to time as "the moving image of eternity" and implies that time, which belongs to the realm of ever-changing things, resembles the eternal only through its perpetual endurance. The other sense of the eternal is also implied—the sense in which eternity belongs to the realm of immutable being. The eternal in this sense, as Montaigne points out, is not merely "what never had birth, nor will ever have an end," but rather that "to which time never brings any change."

There are two great problems which use the word "eternity" in these opposite senses. One is the problem of the eternity of motion: the question whether motion has or can have either a beginning or an end. The other is the problem of the existence of eternal objects—immutable things which have their being apart from time and change.

The two problems are connected in ancient thought. Aristotle, for example, argues that "it is impossible that movement should either have come into being or cease to be, for it must always have existed." Since "nothing is moved at random, but there must always be something present to move it," a cause is required to sustain the endless motions of nature. This cause, which Aristotle calls "the prime mover," must be "something which moves without being moved, being eternal, substance, and actuality."

Aristotle's theory of a prime mover sets up a hierarchy of causes to account for the different kinds of motion observable in the universe. The perfect circular motion of the heavens serves to mediate between the prime mover which is totally unmoved and the less regular cycles of terrestrial change. The "constant cycle" of movement in the stars differs from the irregular cycle of "generation and destruction" on earth. For the first, Aristotle asserts the necessity of "something which is always moved with an unceasing motion, which is motion in a circle." He calls this motion of the first heavenly sphere "the simple spatial movement of the universe" as a whole. Besides this "there are other spatial movements—those of the planets—which are eternal" but are "always acting in different ways" and so are able to account for the other cycle in nature—the irregular cycle of generation and corruption.

In addition, a kind of changelessness is attributed to all the celestial bodies which Aristotle calls "eternal." Eternally in motion, they are also eternally in being. Though not immovable, they are supposed to be incorruptible substances. They never begin to be and never perish.

The theory of a world eternally in motion is challenged by Jewish and Christian theologians who affirm, as an article of their religious faith, that "in the beginning God created heaven and earth." The world's motions, like its existence, have a beginning in the act of creation. Cre-

ation itself, Aquinas insists, is not change or motion of any sort, "except according to our way of understanding. For change means that the same thing should be different now from what it was previously . . . But in creation, by which the whole substance of a thing is produced, the same thing can be taken as different now and before, only according to our way of understanding, so that a thing is understood as first not existing at all, and afterwards as existing." Since creation is an absolute coming to be from nonbeing, no preexistent matter is acted upon as in generation, in artistic production, or in any of the forms of motion.

THE PHILOSOPHICAL and theological issues concerning creation and change, eternity and time, are further discussed in the chapters on CAUSE, ETERNITY, and WORLD. Other problems arising from the analysis of change must at least be briefly mentioned here.

Though less radical than the difference between creation and change, the difference between the motions of inert or nonliving things and the vital activities of plants and animals raises for any theory of change the question whether the same principles apply to both. The rolling stone and the running animal both move locally, but are both motions *locomotion* in the same sense? Augmentation occurs both in the growth of a crystal and the growth of a plant, but are both of them *growing* in the same sense? In addition, there seems to be one kind of change in living things which has no parallel in the movements of inert bodies. Animals and men learn. They acquire knowledge, form habits and change them. Can change of mind be explained in the same terms as change in matter?

The issues raised by the questions of this sort are more fully discussed in the chapters on ANIMAL, HABIT, and LIFE AND DEATH. Certain other issues must be entirely reserved for discussion elsewhere. The special problems of local motion—such as the properties of rectilinear and circular motion, the distinction between uniform and variable motion, and the uniform or variable acceleration of the latter—are problems which belong to the chapters on ASTRONOMY AND COSMOLOGY and MECHANICS. Change, furthermore, is a basic fact not only for the natural scientist, but for the historian—the natural historian or the historian of man and society. The considerations relevant to this aspect of change receive treatment in the chapters on EVOLUTION, HISTORY, and PROGRESS.

In his Preface to *Saint Joan,* Shaw writes, "Though all society is founded on intolerance, all improvement is founded on tolerance, or the recognition of the fact that the law of evolution is Ibsen's law of Change. And as the law of God in any sense of the word which can now command a faith proof against science is a law of evolution, it follows that the law of God is a law of change, and that when the Churches set themselves against change as such, they are setting themselves against the law of God."

Even these ramifications of discussion do not exhaust the significance of change. The cyclical course of the emotions and the alternation of pleasure and pain have been thought inexplicable without reference to change of state in regard to desire and aversion—the motion from want to satisfaction, or from possession to deprivation. Change is not only a factor in the analysis of emotion, but it is also itself an object of man's emotional attitudes. It is both loved and hated, sought and avoided.

According to Pascal, man tries desperately to avoid a state of rest. He does everything he can to keep things in flux. "Our nature consists in motion," he writes; "complete rest is death . . . Nothing is so insufferable to man," he continues, "as to be completely at rest, without passions, without business, without diversion, without study. He then feels his nothingness, his forlornness, his dependence, his weakness, his emptiness." Darwin does not think that the desire for change is peculiar to man. "The lower animals," he writes, "are . . . likewise capricious in their affections, aversions, and sense of beauty. There is also reason to suspect that they love novelty for its own sake."

But men also wish to avoid change. The old Prince Bolknoski, in *War and Peace,* "could not comprehend how anyone could wish to alter his life or introduce anything new into it." This is not merely an old man's view. For

the most part, it is permanence rather than transiency, the enduring rather than the novel, which the poets celebrate when they express man's discontent with his own mutability. The withering and perishing of all mortal things, the assault of time and change upon all things familiar and loved, have moved them to elegy over the evanescent and the ephemeral. From Virgil's *Sunt lacrimae rerum et mentem mortalia tangunt* to Shakespeare's "Love is not love which alters when it alteration finds," the poets have mourned the inevitability of change.