Rationalism in Greek Philosophy

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WHATEVER ELSE MAY BE SAID about early Greek philosophy, it is safe to maintain that from its very origins it made a distinction between the world as it appears to man and the world as it really is. Philosophers differed about what was appearance and what reality and about how one knew which was which, but as soon as they began to write, they turned their critical faculties upon the uncontrolled experience of their fellows and said that it was not as it appeared to be. If it is true that the pre-Socratics maintained that the world was really some form of matter in various stages of condensation and rarefaction, then they were at the same time agreeing that it did not look like that. For if the kind of matter in question was one of the elements, Air or Earth or Fire or Water, no one could have said that everything appeared to be one of these. A modern chemist similarly might say that everything is a combination of some of the numerous elements in the Table of Atomic Weights which have taken the place of the ancient four, but he too would not say that water looked like a combination of two gases, one of which is highly inflammable and the other of which “aids,” as the text-
books say, combustion. To confront a highly heterogeneous world and reduce it to simplicity, whether the simplicity of material substance or of law or structure, demands an intellectual technique which goes beyond the limits of uncriticized observation. Just what the technique was in the sixth century B.C. we no longer know. But that such a technique must have existed is indubitable.

To say that something which we experience is really something else demands a definition of "reality." In general the men who were the first Greek philosophers defined the real as the unified and the permanent. The data of uncriticized experience are a heterogeneous series of colors and sounds and other sensory percepts which come and go, some lasting longer than others but none permanent. They can be grouped in certain classes of events, named by our common nouns and adjectives, words such as "red" and "blue," or, on a more abstract plane, "color." But to classify them is already to note their similarities, and when men think that it is better to spend their time on the similarities rather than on the peculiarities, they have begun to discard certain features of the world in which they live as unimportant. It is as if they were saying that the various colors may appear and disappear, but color itself is one of the enduring qualities of the visual world. But once the tendency toward generalization has begun, it will continue until the human mind can go no farther. And before long, to continue with our example, they will reach the concept of visual experience which may be of any color whatsoever, but will at least be visual. By applying the same technique to other perceptions they will attain an idea of sensory percepts in general which have the common property of being those experiences which we apprehend by our sense organs. I am not saying that any specific early philosopher actually thought in this manner, for we do not know how they thought. But the degree of abstraction which they attained could not have been attained without some such technique.

But once a man has reached this point, he has still remained in
a world which is impermanent and disunified. For, however similar all sensory percepts may be in their origin in sensation, they are still various in that some are visual, some auditory, some olfactory, and so on. This variety cannot be explained away by a word, and if you are in search of unity, you must go further. Hence, you turn to something which you imagine must give rise to this variety while itself being one in kind. If there is something, no matter what, to which the origin of all the difference in the world may be attributed and which is one kind of thing, reality in one sense of that word will have been found. But it must be something which retains its unity of substance while becoming diversified under varying conditions, and those conditions must be determined by a law of its own nature. Thus if there is some material substance which goes through a cycle of expansion and contraction as an inherent law, as eggs either develop into chickens or die, then it will be said that at last a substantial unity has been reached. But it can also be reached in another way. It might be discovered that though the differences between things are not reducible beyond a point to be determined by the method of investigation, yet all things obey a law which governs all their changes and that law is one and permanent. Just what the law is may differ according to the purposes of the scientists involved in its search. So a group of biologists might agree that organisms developed from earlier organic forms and yet disagree on how they developed. To take a simple example, some might be strict Darwinians and others orthodox Lamarckians. No one in these groups would doubt that each species had a history, but the two groups would split on how that history was to be explained. The one real item here would be the law, the structure of events and their interrelations; the appearance would be the fixed species which seem to be ultimately diversified.
UNFORTUNATELY we do not have enough evidence of the actual writings of the earliest Greek philosophers to know much about their intellectual procedures. Our information comes first from the introductions to Aristotle’s *Metaphysics*. Aristotle lived in the fourth century B.C., a hundred years or more after the men whose views he was reporting. Moreover, he was interested in seeing how far they anticipated his own theory of causation, and the investigations of Harold Cherniss have demonstrated how far afield his interest led him from historical accuracy. Then we have the quotations from their works and summaries of them made by the doxographers, who, as Diels has shown, derive from Aristotle’s pupil, Theophrastus. These men lived, some as late as the second and third centuries A.D. In some cases, those of Hippolytus, St. Augustine, and Eusebius, we have authorities who were only too happy to show up the opinions of their pagan predecessors either as superstition or as anticipations of Christianity. In almost all cases they give us nothing but the conclusions of the men whom they are quoting and nothing of their reasoning processes. One of the sources on which too many historians have relied is the biographical sketches of Diogenes Laertius, a man whose dates are unknown but who must have lived in the early Christian centuries. Moreover, as Richard Hope has shown, the sketches all follow a set pattern which is filled out by legend, incorporated into the text with a kind of gullibility which is, to put it very mildly, suspect. Diogenes, moreover, as if he wished to show no partiality, included the conclusions of several of his predecessors, whether they were in agreement with one another or not. In the third century A.D., we have the figure

1 See his *Aristotle’s Criticism of Presocratic Philosophy* (Baltimore: Johns Hopkins Press, 1935).
of the skeptic, Sextus Empiricus, who by way of criticizing the views of the men whom he calls dogmatists quotes or summarizes their ideas, and sometimes his quotations and summaries are helpful in clarifying the philosophy of men whose works would otherwise be almost unknown. But they are for the most part men for whom he had little regard and whom he was trying to demolish. So that, until we come to Plato, fourth century B.C., we have no one whose works have come down to us entirely or in large segments. The insecurity of our sources must always be kept in mind when we read a history of early Greek philosophy, including the remarks which follow.

1. The earliest recognition of the distinction between appearance and reality that is left to us is in the fragments of Anaximander who, according to tradition, lived in Miletus on the shores of Asia Minor in the middle of the sixth century B.C. What seems to have impressed him most was the eternal process of change which was going on in the universe. This process of change looks disorderly until one penetrates below the surface of things. It requires no great concentration of attention to perceive that in some changes there is a regularity which can be formulated in words, or laws if one prefers. Such are the changes which occur in the birth, growth, and decay of living organisms, changes which later were to be called "coming-into-being" and "passing-away." Then there are also the regular changes in the positions of the heavenly bodies, beginning with the sun and the moon and after them the planets. The regular sequence of the seasons, of the tides—though the tides are not too dramatic in the Mediterranean—of eclipses of the sun and moon, were observed at a very early date. Perhaps the orderliness of the digestive process and of other physiological events may have impressed men at the beginning of their speculations. But in most such cases the end terms seem on the one hand to come into existence out of nothing and to disappear into nothing. For what similarity is there between the fertilized ovum and the baby, between the corpse and the dust into
which it decays? How can the sun which rises in the East and sets in the West be the same sun on the morrow, since no one sees it travel back to the East during the night? What happens to vegetation during the winter? The question of whence and whither must have disturbed Anaximander, for in one of his fragments he says that the process is boundless, "eternal and without age," and that the things which come into being when they disappear return to the primordial mixture from which they arose. Just what this mixture consists of, we do not know, nor do we know whether Anaximander even raised the question. What apparently interested him was demonstrating, as far as possible, that universal change was somehow orderly and that it was a change of genesis and destruction. But the genesis and destruction were only apparent, since the process was endless.

What must first strike the modern reader is that, as far as our evidence goes, the philosopher never raised the question of the origin of the universe in time. By this I mean that he formulated no creation myth, nothing either like that in our Bible or like that in Hesiod's Theogony. There was, according to his way of thinking, no need to assume that once there was nothing and afterward the world. On the contrary, the world seems to have been eternal in his philosophy, as it later was in Aristotle's. For it is as if he thought that for something to have arisen out of nothing would have been a logical impossibility. And that may well have been the reason why he assumed an infinity of beings existing from all time. We cannot on the basis of the remaining texts assert this dogmatically. But on the other hand there would have been little reason for him to assert that the infinite mixture was everlasting if he had been able to believe in genesis out of nothing. Creation ex nihilo is something which we see when we are not critical; criticism alone shows us that it is impossible.

2. When we come to Anaximenes, a younger contemporary

of Anaximander, we have fragments which throw more light on the process of change. To his way of thinking a mechanical process was sufficient to explain the varied appearance of things, and that process was the simple one of condensation and rarefaction. Once again, coming-into-being and passing-away do not look like rarefaction and condensation, but they really are. He gives as his example the air (Fr. A5, from Simplicius). When it is rarefied, it turns into fire; when it is condensed, it becomes wind, then clouds, and finally water. To have imagined the possibility of such a simple explanation is his achievement. He takes a process with which we are familiar in the condensation of moisture and generalizes it into a universal law. But more than that, he sets the tradition, which was later to be interrupted, of maintaining that a mechanical process was a sufficient explanation of all change. No purpose is given, so far as we know, by Anaximenes for cosmic changes. No God, no Universal Mind, is interested in them. He seems to have been satisfied with an account of the mechanism through which the changes come about. It is as if he had said, This is the way things happen, not in a helter-skelter fashion, but according to law. Unfortunately we do not know whether he went so far as to state the conditions under which rarefaction and condensation would take place, nor do we know even whether he raised the question. The two processes were presumably always taking place and in some order. The word “why” in this sort of thinking does not mean “to what end,” but “according to what rule.”

3. The eternal process of change became a cardinal principle of the philosophy of Heraclitus, a late-sixth-century thinker living in Ephesus. Behind or above or below the change there is no stability, nothing out of which or into which the changing objects pass. The flux is the one reality. This flux he described in a famous passage saying that this world was made by none of the gods or men, “but was, is, and ever shall be an everlasting fire, kindled according to measure and put out according to measure” (fr. B30, from Clement of Alexandria, third century A.D.). The
kindling and extinction of the cosmic fire are thus orderly and not random. To men who follow their senses the universal law is not known. But the wise man, who follows reason, will understand.

The one thing which is fixed in the universe is the law by which the flux is ordered. Once again, we do not know the details of this law; we know only that it exists, that it is universal in its application, and that it is understood only by the reason. We have fragments which hint at a cyclical change in what later were to be called the four elements, but even if such scraps are authentic, they tell us little about the conditions under which the changes occur. It is more likely that Heraclitus was not so much concerned with that problem as with the consequences entailed in the reality of the flux. For most of the remaining fragments deal with the apparent paradoxes resulting from the instability of things. If everything is in a state of change, the names which we give them become misleading, for as soon as we label something, we seem to give it a “nature” which is lasting. But if nothing endures, all such labels are a vain and childish attempt to arrest the passage of time, to grasp at fleeting shadows, to distinguish that which will not bear distinction for it is melting into the whole. If the world were smoke, says Heraclitus (fr. B7), the nose would sniff out differences in it. For the differences are our way of seeing things. To put the matter in modern language, which is anachronistic, things are congealed out of the flux by our sense organs; the reason will show us that there are no things.

With this in mind the fragments of Heraclitus which assert the coexistence of contradictory attributes in the same subject become clearer. When he says (fr. B58) that good and evil are one, he probably means that the distinction is made by man, not by nature, and that from the rational point of view there is no distinction to be made between them. They are resolved into one in the flux. So too when he says (fr. B62), “The immortals are mortal, the mortals immortal, the former living the death of the latter, the latter dying the life of the former,” the distinc-
tion between gods and men, life and death, evaporates when one meditates on the nature of reality. All distinctions are human reifications, fictions with at most pragmatic value, and if one is going to be philosophic, one will see that they do not hold good of reality.\(^5\)

We have now come a long way from the simple observation of Anaximander, that the world is an eternal process of change. For Heraclitus not only accepts this position but dwells upon its consequences for human life. We therefore have here for the first time, though such conclusions are obviously limited by the texts at our disposal, the idea that a knowledge of reality is inherently better than a knowledge confined to appearance. This is of course an assumption on the part of the philosopher. One might very well conclude that reality itself is evil and that knowledge of it is knowledge of evil. If we are to know evil, we might be called upon to shun it, not to seek it. If philosophy gives us a picture of the world in which our distinctions both of fact and of value are meaningless, then it might be argued that we ought to turn away from philosophy and follow the dictates of human nature, instincts, intuitions, and undisciplined appetites. But that conclusion has never been drawn to the best of my knowledge, not even by Schopenhauer. Occidental rationalistic philosophers have sought that which they called the real, and regardless of whether their findings negated all the aspirations of the human animal or not, they have urged us to live in harmony with it.

4. Meanwhile there was developing in Italy a group of philosophers of whom the most famous are Parmenides (perhaps early fifth century) and his pupil Zeno, who, taking sharp issue with the conclusions of Heraclitus, inferred no less paradoxical ideas about reality.

In the fragments of Parmenides we find a distinction between Truth and Opinion which was to have a long history. Aside from

all other traits of Truth, it was said to be something which is reached by pure dialectic, not by observation, and if its teachings contradict common belief, tradition, observation, so much the worse for them. They are in the realm of Opinion. This clearly is an application of what later was called the Law of Excluded Middle. Now the middle is always excluded when one asserts either a proposition or its contradictory: an apple is either red or not-red; a plane figure is either a triangle or a nontriangle; a man is either alive or dead; a billiard ball is either in motion or at rest. When it is a case of simply adding the word “not” to the verb “is,” the technique is simple enough. But when the negative is attached to the predicate noun or adjective, trouble ensues. For one may have several possible predicates which are other than the predicate asserted of the subject. How one knows a priori, that is, by logical or rational means alone, which predicates are mutually exclusive and which not, is still not clear, for logical manipulation alone will not tell one. A nontriangle may be a square, an oblong, a circle, and any number of polygons. Hence it is obvious that one cannot infer that if a plane figure is a nontriangle, it must be a square or any selected one of the other plane figures which are also nontriangles. If, however, one sticks to the general term, "nontriangle," one is safe.

It looks on the other hand as if the discovery of mutually exclusive terms, neither of which is simply the negation of the other, was based upon what we have come to call by the very vague word “experience.” We may assume that a body must be either in motion or at rest, and hence on the basis of that assumption we may substitute for the sentence, “The body is not in motion,” the sentence, “The body is at rest.” But within the confines of pure dialectic, the second alternative must remain a mere negation. No one could learn from negating the verb “to move,” that he would come up with the verbal phrase “to be at rest.” That information comes from a realm beyond logic. In so far as logic is a purification of experience, it absorbs terms from experience and thus seems able to tell us what possibilities exist. This lesson has not
always been learned and it certainly was not learned by the fol­lo\-wers of Parmenides. The importance of insisting upon it here is that the dialectical method of the Eleatics, as these philosophers were called after their place of residence, has remained in western philosophy the one road to certainty down to our own times.

Parmenides utilized the method to uncover the nature of existence as a whole. The fragments do not use the term, "existence as a whole," but the argument of Parmenides would not apply to anything less than the whole of things, when that whole is thought of as a single being, the Cosmos, the Universe, Being, or Nature. Now all that can be said of such an all-inclusive being is that it exists. The negative of existence is nonexistence, nonbeing, or even nothing. With this and the Law of Excluded Middle as a start, the philosopher can argue that Being must have existed from all time, for it could not have come from nonbeing. (The Jew or Christian will ask, "Why not?") Therefore it must have come from Being, that is, from itself, which is identical with saying that it had no origin. It must, moreover, be everlasting, for it will either turn into nonbeing or remain itself. The former is impos­sible, for something cannot turn into nothing, and the latter is equivalent to holding that it is everlasting. Thus whatever existence is, it is without beginning or end. Second, it must be con­tinuous, without gaps. For the gaps would either be nothing or itself. And once more we are forced by the dialectical situation to conclude that between all supposititious bits of it there are other bits of it. And this would make it continuous. Third, it must be immutable, for it could change only into itself or into some­thing else. But there is no something else, for the Universe in­cludes everything. And to change into oneself is to remain im­mutable. Finally, it must be bounded and not infinite, for if it lacked boundaries, it would not be all-inclusive. An opponent of Parmenides might reply that it must be bounded by itself or by nothing. In the former case it would be infinite in extent and in the latter unbounded. If one asks why Parmenides did not think
of that, the answer is that Parmenides was probably more interested in arguing that existence as a whole lacked nothing, and since the adjective “infinite” was a privative term, meaning the lack of limits (fines)—and the same is true of the Greek term—to be self-bounded was to be self-enclosed or one.

Since I have interpreted this fragment somewhat freely, it might be well to quote the words of Parmenides himself, for they will not only do him more justice than a modern paraphrase can do, but also illustrate the poetic vagueness which is combined with the dialectic sharpness in the original.

One conclusion alone lies before us: that It is. In this direction are many signs: Being is unborn and indestructible, a whole unique in kind and motionless as well as without end. Neither was it once nor will it be, since it exists now, all in one place, one, continuous. For what origin would you seek for it? How and from what source would it take its growth? . . . I shall not let you say or think that it arose from Nonbeing. For Nonbeing cannot be either said or thought. And why should it have arisen later or sooner, had it been born of nothing? And so it must be all together as a whole or not be at all.

Nor will the force of argument lead us to say that anything but itself ever arises from Nonbeing, wherefore Justice has not loosened her fetters to permit birth and death but holds fast. And the verdict concerning these matters is as follows: It either is or is not. But surely it has been decided, as necessity demands, that the one road is unthinkable and nameless (for this is not the true road) and that the other really is and is the true road. How then could what is perish? And how could it come into being? For if it comes to be, it is not now, nor does it exist now if it is going to come into being. In this way genesis is ruled out of court and destruction unheard of.

Nor is it divisible, since it is homogeneous. Nor is one part of it stronger than another, which would prevent its being continuous, nor weaker, but all being is a plenum. The whole is continuous, for Being is in contact with Being.

Moreover it is immovable, bound in the confines of great chains, without beginning, without end, since genesis and destruction have been driven far away and true belief has rejected them. It is always the same and stays self-contained and remains steadfast in one place. For strong Necessity has it in the chains of its limits and holds it in
on all sides. Wherefore the law prevents Being from being endless, for it lacks nothing. Otherwise it would lack everything.\footnote{Fr. B8. The last sentence is questionable. The Diels-Kranz translation reads: \ldots fehlte ihm aber der, so würde es des "ganz" bedürfen (?)}. The apparent implications of this argument may be summarized as follows:

(1) If one is to talk about the whole, of Being-as-Being, of the all-inclusive, one can say of it only that it is, or exists. For all predicates attributed to it turn out to involve negations of their "opposites." If we say, for instance, that the universe-as-a-whole—assuming that the qualification "as-a-whole" means something—was created, then we are implicitly denying that its all-inclusiveness includes the past. If we say that it arose out of something else, then we deny that all possibilities are included within it. Similarly, if we affirm that something is everywhere, then we deny that it is here rather than there. And so it goes. If then the word "reality" is to cover everything, we are driven to the conclusion that it is no more this than that, and the one affirmation which we are reduced to is Parmenides' \textit{It is}.

(2) If one select any single being, a rock, a tree, a man, and discuss it in isolation from everything else, confining attention to it as if it were a universe in itself, then similar conclusions result. For internally it can undergo no change, no beginning, no end; it must remain this rock, this tree, this man. Whether it is psychologically possible to think of anything whatsoever in this manner is questionable, but philosophers ever since the time of Parmenides have thought it was. Thus every common noun was believed to name something which could change only at the price of its name becoming ambiguous. Once, for instance, you have defined a man as a rational animal, then the irrational child or the idiot is not a man. And by the application of the principle, Nothing can come from nothing, the being under discussion can have no origin and must be eternal. The individual man could be born, grow, and die. But his animal rationality has a different kind of
existence. One could of course simply maintain that such beings merely pop into existence in some inexplicable manner, which would not be a rational explanation, or that we are from time to time confronted with things of certain attributes and let it go at that. But that too would be an abandonment of rationalism. For rationalism, besides everything else, demands that we explain all events as far as possible. The limits of explanation give rise to another problem and the technique of explanation a third. But we are not discussing those questions here. We are more interested for the time being in pointing out that in so far as one is using dialectical means alone, unsupplemented by observation, experience, or other supposed sources of information, the individual, whether it be a person, the universe, a specific quality, or, as was discovered much later, God, can be named but not described unless one puts it into a class of similar beings. And to the extent that it is unique, to that extent it is ineffable.

(3) The technique by which this result is reached is in itself of importance. First, one assumes that of two logical possibilities only one may exist, not in the realm of logic but in that of fact. Man, for instance, must be either rational or irrational. There is no midway point between the two extremes, no graded series of rationality, though surely the philosophers must have observed that some men are more rational than others. This furnishes the investigator with a world of "opposites." Opposition itself, if we may trust to the etymology of the word, arises from a basic metaphor which is spatial. Literally, two things are opposite if they are located at the ends of a straight line. Let us call these two ends the Right and the Left. If something is on the Right, it cannot be on the Left at the same time, and vice versa. This would appear to be obvious. The use of this metaphor of opposition is common to most ancient philosophy and is an integral part of the dominant tradition of thinking right down to our own times. If, as in Heraclitus, all things are in a state of change, then Right is turning into Left and Left into Right and our line as a whole is no more oriented to the Right than to the Left. The
paradoxes of Heraclitus can all be interpreted as arising from reasoning of this sort. They disappear as soon as one concludes that there is no *it* to be the subject of the verb *to change*, and, unless I have seriously misread Heraclitus, that is his position. He seems to have asserted that the only permanent being in the universe is the law of change itself and that there are no substances which undergo the changes. In our own times this was the position of Bergson and Whitehead, for to the former the only permanence was the *élan vital* and to the latter, process.7

(4) It was also assumed that if reasoning gave one an irrefutable conclusion, one was bound to accept it, regardless of whether it was in conflict with observation. This is standard operating procedure in our day too, though we are more interested in drawing our premises from observation than our forebears were. Yet nothing could be more contrary to common sense than the belief that the earth moves round the sun. We see the sun moving from point to point between dawn and sunset. But we have reasons for assuming that the sun is stationary and the earth in motion. These reasons are based not merely on the relation between the two bodies in question, but also on their relations to the other planets. But clearly, if we had only to consider the relative positions of the earth and the sun, it would be just as reasonable to believe that the earth is fixed and the sun moving as the contrary. We could then, if we wished to push our observations further, plot the positions of the planets from the position of the fixed earth and we would get a system like that of Ptolemy. In fact, this was his method. My point in introducing this here, in spite of repeating something of what we have said before, is to indicate that no matter how rational we may wish to be, we shall have to start with certain premises which we shall take for granted. But once they are assumed and their implica-

7 Though Bergson did not believe that there was any formula which would describe the action of the *étan* and Whitehead introduced what he called "eternal objects" into his system which explained the regularity of certain changes.
tions drawn out of them by logical means, we shall be forced to accept the conclusions, no matter how strange they may seem.

Some of the conclusions of the Parmenidean technique of reasoning were drawn in the fifth century by Zeno. These conclusions come down to us from Aristotle's Physics. Whereas Parmenides had said that the whole did not move, his disciple attempted to prove that nothing whatsoever could move.

One of the arguments is called the Puzzle of the Arrow. The argument runs that a moving object, in this case an arrow, cannot move from one place to another, since at every moment in time it is at some position in space. And to be in a position at a given moment is to be at rest. The moving object must be in different positions at different times, but there is no explaining how it gets from one position to another, since it is always somewhere at some time and that is to be at rest. Now Zeno does not deny that we see arrows flying through the air; he merely says that there is no rational account of how they do this. A second puzzle is that of the race between Achilles and the tortoise, chosen obviously as symbols of the fastest of men and the slowest of beasts. If you give the tortoise a head start of any length, Zeno argues, it will be impossible for Achilles to overtake the beast, for he must begin with reaching the point at which the tortoise started, and during that time the tortoise will have moved on a bit. This will continue as long as the race continues, for as Achilles moves ahead, so does the tortoise. If we assume that Achilles covers half the distance between him and the tortoise in each stage of the race, the series of distances will keep decreasing by, let us say one half, but it will never reach zero. Yet we see fast things overtaking slow things. The problem is, how can this be explained rationally?

We shall not enter into a discussion of Zeno's assumptions about space, the interrelations between points and instants, the composition of spatial magnitudes, but confine ourselves to one aspect only of the argument. This is, where there is a conflict between
common sense, ordinary observation, and reason, it is reason which we must follow. If reason shows us that the universe is a solid immovable being, without beginning or end, then, regardless of what we see or feel, our observation must be abandoned for what we know "really" is. The test of the rational is logical consistency and the self-evidence of our premises. But the only self-evident premises are those which contain no reference to fact. It is self-evident that a human being must be blue or not blue. But it is not self-evident that he must be blue, white, green, red, or any other specific color which can be named. It is self-evident, to take an example of Aristotle's, that you will be either alive or dead tomorrow; but it is not self-evident which you will be. But Zeno's procedure could be reversed and the testimony of the senses retained as the test of truth. Such a procedure, however, has never been consistently followed by anyone, for, if it were, we should have to abandon the use of common nouns and all other symbols of universals. And, if that were done, knowledge would be reduced to sensory apprehensions at a given moment (though we would be unable to date the moment) and these apprehensions would be ineffable. The moment we tried to express them in words, we should have to use terms which transcend the particularity of our apprehensions and consequently drop out of sight everything which individualizes them. We shall see what happened when the Sophists attempted to do this.

5. An Italian contemporary of Parmenides, Empedocles, seems to have been influenced by Eleatic arguments, though there is no evidence worth taking seriously that he had actually studied his elder's writings. We consider his views on the two worlds here because of his dates and because of a possible logical, if not historical, connection between them and those of Parmenides. If the real is indestructible and ungenerated, then, as Parmenides had shown, there is no logical explanation of change. But one might introduce a postulate here to the effect that all change is combination and separation of substances which themselves are im-
mutable. Empedocles makes this assumption. The permanent substances he called the elements, and he appears to be the first ancient philosopher to reduce them to four and to identify them as Earth, Water, Air, and Fire, though in view of the use of the last three of them in earlier theories, it is at a minimum possible that he simply added Earth to the list to provide two couples. Be that as it may, we find the four distinguished in his fragments as the "roots of all things," and in a fragment which seems to carry on a thought of Parmenides, he says,

There is no permanent nature of any mortal things, nor any termination by destructive death, but there is only a mixing and an exchange of what is mingled. Nature, on the contrary, is but a name given by men.8

The mortal things are the things which we find about us, which seem to come into being and pass away. These things are made by combinations and dissolutions of the four elements which do have permanent natures. There is no termination of their existence by destructive death, since their elemental substances remain after the compounds have been broken down. This is equivalent to saying that there is no such thing as water; there are only hydrogen and oxygen, combined in the proportion of two to one. It is clear, one might think, that when one says, "There is no such thing as . . .," one should have a fairly definite idea of what one means by "is" or "exists." When we say that there are no such things as ghosts, we do not mean that most people do not see ghosts, but that what they see are not the spirits of the dead, immaterial but yet occupying space. So when we say that there is

8 Fr. B8. This difficult fragment comes from Plutarch, who introduces it with the words, "Empedocles says that there is no nature of anything, but a mixing and separation of the elements." It would seem that Plutarch here thought of "nature" as a permanent characteristic of that to which it was attributed, and he interprets the fragment as contrasting the characters which depend on mixture and separation and those which are rooted in things. There is, however, abundant room for dispute over the meaning of "nature" here as elsewhere. For some of the various interpretations of the passage, see J. Burnet, Early Greek Philosophy (3d ed.; London: Adam & Charles Black, 1920), p. 205, n. 4.
no such thing as water, we must mean that water is not elemental but can be analyzed. When Empedocles said that mortal things have no permanent nature, he either meant something like that or he was not quite sure about what he did mean. He too was looking for permanence and found it in the elements.

Along with them he believed in the necessity of having two opposing forces which could unite the elements and separate them from whatever mixtures they might be in. The force of union he called Love, that of separation, Strife. It seems to be assumed here that the elements of themselves would never combine, nor would they separate once they had been combined. Though we shall return to this later when we come to the question of explanation, it is important to indicate here that this would seem to be the first entrance into philosophy of the assumption that nothing would ever change of its own accord. "Natures" are self-maintaining. It is only when a change occurs that an explanation is required and that explanation will lie in the direction of finding something outside the changing event which produces or causes the change. The distinction between active force and passive matter has a long history and remains part of the western tradition down to our own times.

Oddly enough, these two opposing forces once posited, the question arises of why the whole world does not at some time disintegrate into its elements or why at some other time it does not form a block, like the Being of Parmenides, and remain fixed as such. Empedocles provides no more reason why this does not happen other than to say that at times Love seems to have the upper hand and at other times Strife. The fragments suggest that

9 Cf. Cicero, four hundred years later, De finibus iv. 7. 16: Omnis natura vult esse conservatrix sui, ut et salva sit et in genere conservetur suo. And he adds the astonishing words, ad banc rem aiunt [the Stoics] artes quoque requisitas quae naturam adiuvarent. In Aristotle too, art was invoked to "complete what nature is unable to bring to a conclusion" (Physics 199a 15), but the word "nature" is so vague in Aristotle that one should be astonished at no use being made of its many meanings. Cf. G. Boas, "Some Assumptions of Aristotle," Transactions of the American Philosophical Society, n. s., XLIX, Part 6 (1959), 47 ff.
this occurred in cycles, probably on the analogy of the life cycle in animals and plants. What interests us here is that sooner or later a philosopher is driven to stop and say, “These are the facts.” The facts may be a simple hypothesis which seems self-evident; they may be an analogy or metaphor in terms of which everything else is to be explained. But whatever they are, they present a limit to explanation. Beyond them there is no asking why. The cycle of change is the basic fact for Empedocles, and it is an extension of the idea of birth and death. It is perhaps superfluous to point out that a given individual does not repeat the life cycle, like the phoenix, but if the individual is the world as a whole, it must rise from its death or die forever.

6. A second attempt to meet the challenge of Parmenides was made by the atomists, a group who seem to have been headed by Leucippus, who otherwise is unknown, and his younger disciple, Democritus, a fifth-century figure. Democritus went further than Empedocles in his daring, for he simply pulverized the Being of Parmenides into atoms and made each atom an everlasting whole without mutable parts. The atoms were infinite in number and constantly moving about in the void. They differed merely in shape and position. Whatever they were made of was one, and it was the arrangements of the atoms in gross conglomerations which determined the specific natures of things. In our own times this would be analogous to saying that there is only one basic kind of matter, let us say, as Prout said in the nineteenth century, hydrogen. When hydrogen atoms are combined, they would form various substances. Whether Democritus' atoms also differed in weight is a matter of dispute which we cannot hope to settle here. But in any event they were all falling through infinite space and apparently hooking on to one another and building up macroscopic bodies. Reality then was the atoms and the void, and all the rest was appearance.

One has here a theory which is an anticipation of modern materialism. But it was not in any important sense an anticipation of Dalton. Dalton's atoms did differ in their chemical constitution,
and their interactions were not determined simply by the laws of motion. We know too little about Democritus to say whether he laid down the conditions under which his atoms would combine and separate. But we do know that he was willing to assert that the observable properties of things need not pre-exist in the matter of which they were composed (fr. B9). This is important since it rejects implicitly the assumption that absolutely everything found in an effect must have pre-existed in its cause and thus denies the almost universally accepted rule of *ex nihilo nihil*. It did not deny the universality of the causal principle, however; it reinterpreted it to mean that a given cause would always produce a given effect and that no change occurred without a cause. Democritus was to use this principle in his theory of knowledge and, if the ethical fragments are authentic, in his ethics. But in dealing with this man we are talking of a philosopher who was a contemporary of Socrates, living at a time when new problems had arisen. He was not a primitive thinker at all, though this may mean nothing more than that we have more fragments to go on in his case than we have in the case of the Milesians and Heraclitus. If we discuss his views here, it is largely because he lived in the colonial areas of the Greek world rather than in Athens.

7. By the middle of the fifth century it was pretty well established that things are not what they seem. On the level of common sense this distinction arises when a man realizes that he has had an optical illusion, such as seeing the curbstones of a street or the rails of a railway converging in the distance though he knows that they do not “really” converge. Or he may have a negative afterimage, as when, after looking at an intensely red object, he turns his eyes to the white ceiling and sees the same object up there as green. He becomes aware that the world of his dreams is different from that of his waking life, that things in dreams disappear without any apparent cause, that they turn into other things, that, as in *Through the Looking Glass*, you have to run fast to stay in the same place or to eat dry biscuits to quench your thirst. Or he may notice the differences between the perceptions of dif-
different people, one man finding something sweet and another not-sweet, one man finding a burden heavy and another finding it light. These discrepancies, he concludes, must be resolved and harmonized. He maintains that a thing, regardless of human beings and their findings, must be either red or not-red, sweet or not-sweet, heavy or not-heavy; that the laws in accordance with which the thing behaves must be uniform and not shift from moment to moment. This is no different from the philosopher's belief that the world must be describable in constant laws. If things appear to vary among observers or here and there, or under varying conditions, the variations must be able to be correlated with a set of stable conditions. The variable characters he will call appearance, or some synonymous term, and the stable characters he will call reality. If he follows Heraclitus, he will conclude that the only stable thing in the universe is the law which says, *All is change*. If, on the contrary, he follows Parmenides, he will conclude that change is the illusion and stability the reality.

Why the ancient Greeks favored stability, unity, homogeneity, we cannot say. The earliest philosophers were living in a society which was in a state of change, indeed of revolutionary changes, and it might be surmised that their philosophy was an attempt to construct a world in which there was at least intellectual stability. But as a matter of fact the dominant tradition in the West has always been a search for stability and unity, whether of substance or structure or origin or purpose, and surely Europe has varied in the amount of social upheaval.\(^{10}\) Men, moreover, as a whole have an extraordinary ability to adapt themselves to any kind of social condition, and philosophers who sought reality in stability are just as frequently found in stable societies as in unstable. But even the Marxians believe that reality lies in the dialectical movement of history which certainly is not on the level of uncriticized

observation. There are, finally, different kinds of philosophers living in single societies and cultures, and there is no proof that the early Greeks were more troubled by popular revolutionary movements than by the ordinary difficulty of explaining multiplicity and change. The organization of experience into a few homogeneous classes of things which follow determinable and, it is hoped, rational laws is after all the common task of the intelligence. Hence to say that the early Greek philosophers were identifying themselves with the aristocracy which was losing power and combating the democracy which was gaining power, may be true, but it is the result of conjecture rather than evidence. We know altogether too little about the lives of the early philosophers to draw any conclusions about their psychological motivation.

One thing appears clearly, however, even in the disjointed fragments which remain. That is that they all saw that there are two kinds of knowledge, one which is reliable, the other unreliable, or, to use a distinction which appears in Parmenides and was utilized by Plato, one of which was opinion and the other knowledge. What they all meant by "knowledge" was a set of logically consistent propositions. To get such a set, one had to have a subject which did not change its meaning from moment to moment, and a set of conditions in terms of which one could explain the apparent changes. Such propositions would be descriptive and universal. It would not do, for instance, to conclude that sometimes things are multiple, sometimes unified, unless one could also say, "Under conditions, C, things will be multiple; under conditions, C', things will be unified." And if one did reach that point and could describe the two sets of conditions, it would also be demanded that the conditions themselves be strictly identifiable. Roughly speaking, and very roughly, men divided into two camps on this point: one group found the conditions in the kind of knowledge which was relied upon as an index of truth, whether perception or reason; another found them in the things which formed the substance of the universe. This division is largely
theoretical, for most philosophers in this early period were interested in both problems, as far as we can tell. It was only later that they began to specialize and to maintain that one's theory of knowledge would influence one's metaphysics.

II

THE FRAGMENTS which are preserved, unfortunately for the historian, give us only the conclusions of the early philosophers and tell us little or nothing of their reasons for reaching these conclusions. We know pretty well the interpretations of these reasons as given by Aristotle and Theophrastus, but these are too unreliable to use. The situation is as if we were told that Copernicus believed that the sun was stationary and the earth moved round it; that Newton believed that gravitation was universal and that as an apple fell to the earth, so the earth was falling on the sun; that Darwin believed that men descended from an apelike animal; that Planck believed that there was a universal constant connecting the frequency of a radiation with its quantum of energy; or that Faraday believed that all forms of electricity were one. How could we ever be confident that we could work out their reasons for holding such beliefs on these data?

1. In the case of Anaximander we do have a fragment which gives us some idea of his method of thinking in one case. This fragment (fr. A30) was quoted some six hundred years after the time of its supposed author. It says that according to Anaximander man was originally born from some other animal because, though all animals soon after birth find food for themselves, man alone has a protracted infancy and lives on his mother's milk. Hence had he come into the world as an infant, he would have died. We are told that this other animal was supposed by Anaximander to be some kind of fish which, after man was capable of taking care of himself, put him ashore. This, let it be said for the benefit of those who believe that Anaximander was a proto-Darwinian, has
next to nothing in common with modern evolutionary doctrines. It is based presumably (1) on the assumption that man, and perhaps by extension, all other animals, had an origin later in time than the origin of the other things, and (2) that the present conditions of his survival obtained at the time of his first appearance on earth. The demand for origins is common to all cultures; we have for that matter a creation story in the first two chapters of Genesis. But Anaximander's belief, such as it is, that natural law as we discover it today applied even in the early stages of the world's history, a belief that was later to be called the Uniformity of Nature, is more interesting. For it is essential to an intellectual reconstruction of the past, and though it seems reasonable enough to us, it is unusual to find it in a period when miracles and divine interventions of other sorts were also commonly accepted as credible. The philosophers were more interested in combating mythology and folklore than in being the spokesmen for the dominant economic class. Colonial Greece, like most societies, was not all of a piece, and it is as foolish to talk about the Greek Mind as it would be to talk about any other group mind. Minds are found in individuals and the individuals, when it is a question of philosophic matters, are frequently in conflict with one another. But they are also united in their search for rational descriptions of events, and that search will lead them away from improbabilities and caprice in the natural order.

2. Anaximenes, as far as one can tell, relied on analogies to construct his philosophy. According to Aëtius, who wrote not fewer than nine hundred years after Anaximenes, he said that “just as our soul, which is air, holds us together, so the Pneuma and air hold the cosmos together” (fr. B2). And he adds that according to Anaximenes the words pneuma, which was later translated into English as “spirit,” and air are synonymous. Whether, as Burnet says,11 this is “an early instance of the argument from microcosm to macrocosm,” is far from certain, but what is certain is that Anaximenes did extend what he believed to be a fact

of human physiology to the cosmos as a whole. Plutarch (fr. B1) maintains that Anaximenes also used a human analogy in proving that rarefaction of the air made it warmer and condensation colder. For when we exhale, the air is warm, while when our mouths are closed, it is cold. If he thought of this as experimental proof, it is strange that he did not also observe that it is our breath which is warm and not the circumambient air. In any event, we cannot attribute to him any insight into what we should call the experimental method; the most we can say is that he made observations and used them as the basis for certain analogies.

3. In Heraclitus we have a more fully developed method of inquiry preserved for us. In the first place, it is clear that he was willing to accept the testimony of the senses as evidence of the flux. He estimates the eyes as better witnesses than the ears (fr. B101 a); again, “of whatsoever things I can see, hear, and learn, these are what I prefer” (fr. B55); and many of his paradoxes are simple perceptual observations. For instance, there is nothing mysterious in his saying that cold things become warm and warm things cold, that the moist dries and the dry becomes moist (fr. B126); these are clear statements of what goes on before one’s eyes. Similarly, the relativity of perceptual qualities, expressed in such sayings as the preferences of asses for straw rather than gold (fr. B9), that swine wash in mud and barnyard fowl in the dust (fr. B37), that fish can drink sea water whereas men would die if they drank it (fr. B61), that all things are beautiful and good and right to God whereas men make a distinction between right and wrong (fr. B102). Surely such conclusions must come from ordinary perception and its implications, if one relies on ordinary perception. That qualities vary with the perceiver became one of the main proofs of skepticism in later times, and one form of skepticism was attributed to the followers of Heraclitus.

But this did not imply to his way of thinking that no knowledge was attainable. Far from it. One had to understand that there

12 But see also fr. B107.
was a law according to which these variations occurred. The world of perception could give one no firm place on which to stand, and if one remained in it, one was doomed to live in the flux. That was one solution to the problem. The desire to escape from it has the rational, if not the psychological, motive embedded in the assumption that truth must be absolute, which in practice meant that a true proposition must somehow or other escape from any system of relations. Yet once a system of relations is discovered and accepted as basic, truths which are relevant to it are just as absolute as any others. That knowledge free from and independent of all conditions is unattainable does not seem to have occurred to Heraclitus: one could escape from the flux by finding the law in accordance with which all fluctuations, all changes, took place. On the cosmic scale we have a hint of such a law in the fragment which says that there is a transmutation of elements from air to fire, from earth to water, from fire back to air, and from water back to earth (fr. B31). There is also an emphasis on the identity of wisdom and a knowledge of the law “by means of which all things are steered through all” (fr. B41). There is also the famous fragment (fr. B94) in which he says that the Sun will not stray from his course; if he did, the avenging Furies would discover him and presumably whip him back to his proper place. Because of ignorance of this law, the poets and philosophers, Hesiod and Pythagoras and Xenophanes and Hecataeus, have learned nothing (fr. B40).

It is understandable that if the senses show us a world in which nothing can be said of any particular thing, because nothing remains what one apprehends it as being, reason will tell us that all things must really be one. The eyes and ears by the very mutability of their testimony show men that behind them must be something whose nature is always the same. That something is symbolized by the everliving Fire. Dark though such sayings may have been both to the ancients and to modern interpreters, they present no greater difficulty than the attempt to attribute one predicate to anything which is in process. The life of a man from
conception to death confronts us with a similar problem. How can we name the nature of a man if he changes from moment to moment? One can describe his history step by step, but one can do no more when it is a question of covering his whole biography in one adjective than to say in a tautology that he is in a state of change. There is nothing easier—nor more prudent—than to attribute contrary predicates to such a process. But in doing so, we are misled by the character of our language. As we have said before, a common noun or adjective, being by its very nature universal, confers stable properties upon that which it names or qualifies, and if one believes that there is an image of the world in the language which we use to describe it, one inevitably encounters paradoxes.

In one of the fragments of Heraclitus occurs the word *logos* (fr. B1). Though we are avoiding as far as possible textual criticism in this book, it is necessary to dwell for a moment or two on this word. The fragment reads,

> Although this *logos* is everlasting,13 men are devoid of understanding of it, both before they have heard it and when they have heard it for the first time. For although all things happen in accordance with this *logos*, they resemble people without experience of them, trying words and deeds such as those which I relate as I distinguish each thing according to its nature and indicate what manner of thing it is. But other men do not know what sort of thing they do when awake, just as they forget what sort of thing they do in sleep.

Now the primary meaning of *logos* is “word,” but it came to mean reason, theory, even definition. The Stoics later were to use it as if it were the name for the voice of God, and in Philo Judaeus it was to be called the Son of God, as of course it was also called in the opening of the Gospel according to Saint John. I have used the term, universal law, because I find it hard to believe that Heraclitus, if correctly quoted by Sextus Empiricus from whom we get the fragment, would emphasize the truism

that other men before they had heard his theory were ignorant of it. But if the logos is the universal law which governs the flux, then whether men had heard of it or not, they might be expected to know of it by instinct, as the law of their own nature. Heraclitus may have been dark, but the historian’s duty is to illuminate his authors as far as possible. I have therefore interpreted Heraclitus’ logos as that which can be known to lie behind the flux. The flux is apparent to the senses and the logos is incorporated in sensory percepts. The problem which other men have not solved is the extraction of the logos from the heterogeneous flow of perception. For, though eyes are better witnesses to the truth than ears, “both the eyes and the ears are bad witnesses to men if they have barbarous souls” (fr. B107). Barbarous souls are souls which do not speak or do not understand one’s language, and in this context one has a right to interpret that language as the language of the senses. It tells us both about the flux and about its regularity.

There is one more detail which should be indicated. Heraclitus seems to believe—“seems” since he gives us no overt statement of his belief—that if something changes, it must change into its opposite. Much of the sting of his aphorisms is based on this belief. It is obvious of course that if something changes one of its qualities, the change may be symbolized by its passing from \( P \) to \( \neg P \). But whether the particular \( \neg P \) is an opposite in any sense of the term approaching the literal, remains a matter of observation. If, however, all change is between opposites, then the whole process of change will include both poles, and, just as he says (fr. B60) that the way up and the way down are one and the same, so he can fuse all opposites into one balanced pair and do so logically by considering them as termini of various processes. We cannot read his mind and shall not pretend to; we merely say that such an interpretation would throw some light on his obscurities. The assumption that change was always from one pole to its antithesis became a cardinal assumption of Aristotle as well.\(^{14}\)

\(^{14}\) See G. Boas, \textit{op. cit.}, pp. 61 ff.
4. Parmenides and Zeno flatly reject the testimony of the senses. Distinguishing between Truth and Opinion, they maintain that the road of Truth is, as we have seen, laid out by the reason as it argues in a purely dialectical manner. The poem of Parmenides does not give grounds for rejecting perceptual evidence, and indeed Aristotle said that he believed in nothing else. On the other hand, Zeno, in so far as he survives, gives us puzzles entangled in the acceptance of such evidence and argues to the very contradictory of what it tells us. We see the arrow fly; we see Achilles overtaking the tortoise; we see that magnitudes can be increased by addition; we see that people can walk about in space. The puzzles try to show us that such experiences cannot be trusted since they will not sustain logical analysis. Reality must be rational, that is, describable in noncontradictory language. So a fifth-century Eleatic, Melissus, argues clearly that we see change, yet know that nothing changes.

His critique of perception is based on the assumption that, as he is quoted by Simplicius as saying, though we see things changing into other things, the hard becoming soft, the soft hard, “It is clear . . . that we do not see correctly, nor does it appear to be true that those things are many, for nothing would undergo a change if it were true being” (fr. B8). Though a saying of Melissus cannot commit Parmenides to anything, a reading of his remains will convince one that he reproduces his master’s arguments. What must strike a modern reader as strange is that no attempt seems to have been made to explain why perception led us so far from the truth. If the explanation was given in passages now lost, the question still remains of why later writers were so uninterested in them that they did not preserve them.

5. Empedocles gives us more details of the process of knowledge. If we accept the order of his fragments as given by Diels, he rejected very early in his poem the idea that any one of the senses was any more trustworthy than any other. The goal of the intellect is clarity and clarity will be attained by the intellect through all the senses indifferently (fr. B3). One thing, and this
echoes Parmenides, is certain, that nothing can come from nothing and nothing can pass away into nothing (fr. B12). As we have seen, that which is everlasting is the four elements. If these elements could have been destroyed, there would be no reason why they should have survived, for whence would they have derived the stuff which kept their quantity constant (fr. B17)? Since everything is made of the four elements, so must men be made, and by laying down a rule which remained an integral part of European philosophy, Empedocles was able to conclude that there is a kind of sympathy which attracts like to like (fr. B90). The Fire within us sees the external Fire; by love we know Love and by strife Strife (fr. B109).

This principle, according to Aristotle’s pupil Theophratus (De sensu 1), divided the Greek epistemologists into two camps, the likeness school and the unlikeness school. It was assimilated to the causal principle that only similars could stand in a causal relation. Hence it oriented the researchers when they were looking for causes. In epistemology it resulted in the doctrine that there must be some sort of homogeneity between subject and object so that, for instance, a material object occupying space could not be conceived as being known by an immaterial mind which was essentially spaceless. In Empedocles little is said by way of explanation, but since he believed also that “there are effluences of all things which have come into being” (fr. B89), it is likely that he also believed these effluences to enter the soul through the sense organs, which apparently were little orifices. He gives a poetic description of the eye (fr. B84) in which he says that it is made of Fire, entrapped there by the various ocular membranes, and adds that there is very little Earth in it (fr. B85). The doctrine of effluences is found also in what remains of Democritus. Such doctrines are not unlike those of our own times which maintain that air waves or light rays impinge upon the auditory or optic end organs and there set up nerve currents which eventuate in sounds and sights. The difference between the two sorts of doctrine is that the effluences were probably little particles of the objects
themselves. But at this point we step across the frontiers of conjecture. It would be more prudent to draw back.

6. The one authentic fragment of Leucippus comes to us from Aëtius and runs, “Nothing comes into being without a cause, but all from reason along with necessity” (fr. B2). This simple and apparently innocent sentence can be and has been interpreted in a variety of ways. The Latin methodological slogan, ex nihilo nihil, which Lucretius attributes to Epicurus, is our usual way of putting the thought which is concealed in it. But whether we use the Latin or the Greek, the vagueness of the phrase remains.

First, there is no way of telling whether or not the things which come into being are material things or not. As the principle was used later, it was an explanatory rule applied exclusively to material things and it directed the scientist always to look for some material source of the matter which had seemed to come into being. The importance of this was that it was equivalent in use to the principle of the conservation of matter, or mass, and could be employed in criticism of attempts to show that rabbits could be pulled out of hats in which they had not previously been put, or, to take a more elegant example, that matter could be created.\(^\text{15}\) It had a corollary to the effect that no matter could be lost, and when the two principles were used together, one drew out of them the theorem that all changes in amounts of matter were apparent and not real. Strictly speaking this did not imply that non-material things could not be created and destroyed, and consequently, even as early as Democritus, sensory qualities did not have to pre-exist in their causes. As long as one could discover the causes in terms of which their appearances could be explained, all was well. The sensory qualities, however, are not the only things which did not seem to pre-exist in their causes; there was also vitality or animation. How one could explain on the principle ex nihilo the origin of bees in rotting beef or of eels in horse

\(^{15}\) Recently it has been asserted by some astronomers, Hoyle for instance, that matter is created in certain parts of space.
troughs remained a problem until the disputes between Pasteur and Bastian pretty well demonstrated the Law of Biogenesis. But all such puzzles arose from interpreting the principle too literally, and sometimes it was taken to mean not that the effect must pre-exist in the cause, but that there must be sufficient and necessary conditions for the occurrence of the effect and that these conditions were determinable.

Second, then, the preposition *ex* was used merely to assert that all change has some cause which presumably must be antecedent to it. If we explain the growth of a seed into a plant on the basis of the water which it has received, the warmth of the sun, the fertilizer in the soil, we are not saying that the growing plant pre-existing in these three things. We are simply asserting that when we have them, we may expect the seed to grow and when we do not have them, we should expect no such thing. But it should not be forgotten that not very long ago biologists were seduced by the theory of preformationism, according to which the mature plant or animal was actually pre-existent in the seed or ovum and that growth was only an unfolding of what was folded up within them.

Third, the Greek word which I have expanded into the phrase “without a cause” was used by the poets to mean “idly,” “fruitlessly,” and we find in Aristotle, a century later than Leucippus, the word meaning “in vain,” where he says, “Nature does nothing in vain.” But here we are not asked to search for an antecedent material cause for what has come into being, but a purpose which it is supposed to be achieving. This type of explanation is obviously very different from that of the materialist, for if it is used as a unique methodological principle, which it seldom is, then the words *ex nihilo* mean “to no end,” “for no purpose.” Whether this entails the belief that all purposes must be the purposes of some mind, we need not discuss at this point, but it is easy to see that such a conclusion would be normal.

Fourth, where Leucippus combines reason with necessity, we have no way of knowing just what he was referring to. The
combination may mean that all change is rationally explicable and that once we have found the explanation, we can be sure that it will always apply. That we are not indulging in logic-chopping here is shown by Aristotle's concern with the concept of necessity and in modern times by that of David Hume. For there are both logical necessity and causal necessity, the former of which need have nothing to do with the actual course of events. It is the kind of necessity which we have in purely formal arguments whose premises need not be true in order to have a conclusion which logically follows from them.¹⁶

Causal necessity has been used to prove that there is a kind of compulsion in the course of events, the sort of thing which one finds in human life when a man is forced to do something against his will. We say that if a stone is dropped through the air from a height, it has to fall to the ground: there is nothing else that it can do. Two observations should be made about this conception of things: (1) that if things always do occur in predictable ways, we are likely to read necessity into them, and (2) when we ourselves acquire habits from having done things in regular ways, we feel a compulsion to do them always in such ways. The necessity of the usual or the regular or the uniform may be simply read into them as a projection from our own experience. This has some

¹⁶ The standard examples of such consistent arguments would be syllogisms of the following types:

(a) All men are triangles
   Socrates is a man
   Therefore, Socrates is a triangle.
   (Here the major premise is false, the minor true, and the conclusion false, though the syllogism is formally correct.)

(b) All triangles are mortal
   Socrates is a triangle
   Therefore, Socrates is mortal.
   (In this syllogism, the two premises are false and the conclusion true, and the syllogism correct.)

(c) All triangles are plane figures
   Socrates is a triangle
   Therefore, Socrates is a plane figure.
   (Here, the major premise is true, the minor false, the conclusion false and the syllogism once more correct.)
THE BEGINNINGS

substantiation in the common experience of surprise when things do not occur in the ways to which we have been accustomed. The trouble here probably comes from our failure to observe events carefully enough and to see the conditions under which they occur. If we included all the conditions in our descriptions of events, we should see that there is no irregularity in the way they happen. But it is also probable that if we took this seriously, by which I mean if we took absolutely all the circumstances into consideration, we should not stop until we had included the position of the planets and the temperature of the farthest star. To avoid this the scientists have elaborated what they call laboratory conditions, which restrict the amount of probable irregularity.

But these are technical matters which did not seem to bother the men who had the genius first to imagine a cosmos in which regular and general rules could be verified.

Now one of the ways to bring about a situation in which the principle that nothing comes from nothing can be exemplified is to attach the genesis of those beings which might cause trouble to a set of other beings, so simple in their nature that they would vary in a few determinable ways and by the various relations which they would sustain to one another would cause the appearance of the more troublesome things. This was the technique used by the nineteenth-century chemists who were able to explain the properties of chemical compounds on the basis of the spatial arrangements of the elemental atoms which composed them. It was also the technique of such a philosopher as John Locke, who by means of the so-called primary qualities, extension in space, shape, motion, and rest, was able to construct a material world which would conform to all the laws of physics. It would also, he thought, be capable of causing in human minds the existence of the secondary qualities of color, sound, taste, smell, and touch. These latter qualities were thus no part of the material world, did not pre-exist in it, but would come into being when the material objects stood in certain definable relations to the
human organism. Just what those relations were Locke did not attempt to say. It sufficed for his purposes to demonstrate that the secondary qualities were not ingredients of the nonhuman part of nature.

In Democritus we have an analogous technique. He seems to have accepted the conclusions of Parmenides that there must be something which underwent no internal changes. But instead of finding that something in the cosmos as a whole, Being, he broke up the material world into a very large number of tiny particles of matter which he called atoms, each of which was a Parmenidean world. These atoms moved about in empty space and they differed from one another, as we have indicated above, standing in various spatial relations to one another. Whether by size he meant volume, or whether he meant weight, has been questioned, but most historians are agreed that he meant volume, that is, the amount of space which each occupied. As examples of the atomic shapes, he cited roughness and smoothness, roundness and angularity. We must think of them as very small balls and polyhedra, both regular and irregular. As they move about, they collide and some adhere to others. In this way they build up the macroscopic objects which our senses perceive.

It is these perceptible objects made of atoms which give rise to our sensations. In one of his most famous fragments we find the words, “By custom there is color, by custom sweetness, by custom taste, but in truth there are only atoms and the void” (fr. A49). This means that on the atomic level there are no sensory qualities. But to what extent he meant that these qualities were purely subjective is more questionable. For when he came to explain the origin of the qualities, he based it, as Empedocles did, on effluences from agglomerated atoms, or macroscopic objects. These effluences, at least in the case of vision, were little images of the objects seen, which moved through the air and entered the eye. But in the case of the other senses, the effluences could not be images in any literal meaning of that word, but were actual
sounds, odors, tastes, and textures.\textsuperscript{17} This is consistent with his further principle that only like can affect like.\textsuperscript{18} Consequently, though the sensory qualities may not exist “in truth,” they do exist in the external world, in the world which one might call the superatomic world. Thus he was not, strictly speaking, a forerunner of John Locke. Moreover, in the same paragraph in which Galen reports his distinction between what exists by custom and what exists in truth, we find Democritus saying that the mind gets all its evidence from sensation. Sensory knowledge is therefore a copy of the macroscopic world, but its traits cannot be attributed to the atomic world itself.

Since we can have no sensory knowledge at all unless the effluences from objects enter our bodies, contact is essential, and therefore Democritus maintains that touch is our primary sense. If he means, however, that we are aware of the contact between our eyes and color, between our ears and sound, a new complication would arise, for it does not seem plausible that we cannot see color without also being aware of the impact of its effluence on the eye. On the other hand, if we may enlarge on the fragments, we do speak of striking colors, soft sounds, and smooth tastes, and he may have observed our attribution of tactual sensations to qualities which are not tactual. But this is an inference and it is more likely that all he meant by touch in this context was contact.

It must not be thought that Democritus left the matter there. If Theophrastus is right, the sensory qualities are determined by the traits of the atoms. For instance, the sour comes from angular and bent atoms, whereas the sweet comes from atoms which are round and “not too small.” He reduces all colors to four, the white, the black, the red, and the green, each of which comes from certain atomic shapes, white from the smooth, black from the rough and irregular, red from such as produce heat, and green

\textsuperscript{17} But as John I. Beare points out in his \textit{Greek Theories of Elementary Cognition} (Oxford: Clarendon Press, 1906), p. 29, n. 3, Democritus did not use the word \textit{eidolon} or image, though later commentators, in particular Cicero, say he did.

\textsuperscript{18} But see Theophrastus \textit{De sensu} 49.
from “the solid and the void.” This is far from clear, even to Theophrastus, but at least it permits us to say that the shapes of the atoms themselves determine what sensory qualities their compounds will assume. He seems, moreover, to have known something of color mixtures, but into that we need not go. What is of more interest is his attempt to reduce all complexity to intelligibility by the process of analysis. This appears to be based on the assumption that when a complex being is shown to be a structure of elementary parts and that when the relations between the parts are known, the complex demands no more explanation. Though in itself this does not presuppose the temporal priority of the simple, there has been a tendency on the part of philosophers to argue as if things began by being simple and moved toward complexity. Thus one can have a universe which starts out as a collection of a few kinds of elements and which gradually becomes complex, the elements forming larger groupings which are called wholes. That this is an illicit inference, if not an assumption, needs no demonstration. Moreover, if explanation is to proceed in this manner, one must be able to state the conditions under which the simples will combine. Democritus apparently did attempt to do this when he said that the atoms collided and that in their collision they became hooked together or otherwise agglomerated. Since there is no evidence that he thought the cosmos to have had a beginning in time, he was not forced to account for the beginning of the atomic motions: they had always been moving about and always would continue to do so. To ask what started their motion would be like asking a physicist what accounts for the first law of motion.

Though the reports of Democritus’ epistemology which have been left to us are more copious than those of any other early Greek philosopher, none of them tells us what we should like to know above all: how did he explain our knowledge of general methodological principles? If all knowledge comes from, or is a complex of, sensory qualities, whence comes our knowledge of such a principle as that of Leucippus, Nothing comes into being...
without a cause? To begin with, we cannot have sensory knowledge of the causes of our sensory qualities, since those causes, ultimately the atoms, are infraperceptual. Democritus, if challenged on this point, would have had to admit that, unless he was simply inventing his theory out of whole cloth, the atoms and their diverse shapes and positions were inferred to exist in order to explain what we actually do perceive. In the second place, the very principles of inference, the rules in accordance with which we make our inferences, are not themselves perceived, nor do they correspond to any atomic shapes and positions, nor could they by the very nature of the case. We cannot expect Democritus to have anticipated Kant and to have said that they are simply the way in which the human reason behaves when it is arguing. But we might expect either him or his critics to have asked the question. But though Theophrastus gives us a very critical account of Democritus' theory of sensation, he says nothing about any theory of what one might call the understanding. I mention this not merely because it is a lacuna in the theory of knowledge of this most interesting figure—for it is only too easy to see such things for oneself—but to call attention to a curious feature of intellectual history. That is, that men could reason well in entire unconsciousness of how they were reasoning. If ever there was a case of practice preceding theory, this is one. This is the more curious in that a somewhat younger contemporary of Democritus, Socrates, was himself very much concerned with precisely this problem. And other contemporaries, the early Sophists, were having a heyday with all the intricacies of logical interrelations. Zeno, as well as Democritus—if some of the fragments of the latter are authentic—knew how to handle logical puzzles.¹⁹

The rationalism of Democritus, then, included an attempt to show the causal relation between reality and appearance. He was not satisfied with pointing out the gap between the two worlds and urging his readers to seek one and turn away from the other.

¹⁹See the puzzle of the cone, fr. B155.
Our ideas of reality grow out of our ideas of appearance, not simply as inferences from them made on logical grounds alone but as effects of the impact of sensory experience upon our bodies. There are plenty of gaps in the theory, but that the two worlds are not causally disconnected is clear. It may be true that his predecessors also tried to fill the gap with some explanation or other, but if so, the passages in which they expounded their theories have not been preserved.

7. It is the historian's great misfortune to know next to nothing of the early stages of Pythagoreanism. The figure of the supposed founder of the movement, Pythagoras, is entirely shrouded in legend and those of his immediate successors are not much clearer. We have reason to believe, however, that by the end of the sixth century B.C. there had grown up in Magna Graecia a consuming interest in geometry among the so-called Pythagoreans, and a belief that the mathematical treatment of problems was that which would be most fruitful in philosophy. Such assertions as, "All is number," on the other hand, mean very little unless they are supported by elaborate interpretations for which the material is lacking. Moreover, whether Pythagoras first proved the Pythagorean theorem or not—and it is now known that it had been proved much earlier than his date, though perhaps not in southern Italy where the movement began—is a question for the historian of mathematics. But what is of importance for our purposes is that the long tradition of answering problems in natural science by the geometrical method started as early as the late sixth and middle fifth centuries. For here we have something more than an appeal to reason; we have a clear statement of what reasoning is.

The beauty of mathematics, whether it deals with numbers or with geometrical shapes or with order itself, is its certainty. If one can assume with propriety that axioms and postulates are self-evidently true, true to fact, then one's conclusions are also bound to be true to fact. And this is what the early mathematicians did assume. The axiom that things equal to the same thing are equal to each other did not simply mean to these men that equivalent
formulas could be substituted for one another. It meant that if one material object was equal in quantity to another, and the second equal in quantity to a third, then the first and the third were equal in quantity. Unless one realizes this, one fails to see any relevance to fact in the slogans and mottoes of the early Pythagoreans. The followers of the mathematical technique were bound to turn away from mythologizing, from sensory perception and from scientific hearsay, and to work toward the elaboration of a set of theorems, linked together by logical bonds, which would do for the philosopher that which Heraclitus' *logos* and Parmenides' dialectic would do. This would constitute a rejection of the senses only in so far as they were inconsistent in their reports. But in so far as these reports could be systematized, they could be accepted. It also involved a purification of sensory testimony to the end that its terms would be univalent. Being univalent, they could be given a meaning arrived at by logical analysis and that meaning would never change. The mathematical circle would be immutable, the perceptual circle imperfect and varying from observer to observer. At most the latter could be thought of as an imperfect copy of a perfect original, an approximation to that which ought to be but never is. If all our ideas could be expressed in mathematical language, the imperfections of sensory experience would be eliminated, and such concepts as those which are found in biology (the horse, the dog, the man) or those which are found in ethics (justice, goodness, wisdom) could presumably be handled in the same way. Whatever the gross superstitions of the early Pythagoreans, they do seem to have had a glimpse of this possibility, and what they saw as a possibility was treated as a reality by the men whom they influenced.

It is also true that since geometry was the basic mathematical science of these early philosophers, and not arithmetic except to the extent that arithmetical relations could be symbolized geometrically, the spatial structure of the universe became the basis of all their thinking. This structure was fixed. There was an absolute up and down, right and left, center and circumference. A
Table of Opposites, which is given by Aristotle in his *Metaphysics* (986a 23), is assigned to the school, and we find in it not only such mathematical terms as odd and even, straight and curved, but biological terms such as male and female, physical terms such as resting and moving, and ethical terms such as good and bad. Now to fix a method of thinking is at least an important contribution to philosophy, and whether one estimate the contribution as good or bad is of little historical importance. Opposition, as we have pointed out, is essentially a spatial term, and when applied to values, sexes, ways of behaving, it becomes metaphorical. The two ends of a line are literally in opposition; goodness and badness are metaphorically so. When one identifies conflict with opposition and transfers the characteristics of one pair to the other, one is no longer speaking literally but figuratively. Much early Greek philosophy was expressed as a conflict between elements and forces. We have seen this in the interplay of opposites in Heraclitus, in the rarefaction and condensation of Anaximander, in the Love and Strife of Empedocles, and indeed the only philosopher treated so far in this study who does not make use of this figure of speech seems to be Democritus. It is in fact fair to say that an awareness of conflict overlying geometrical opposition is a constant phenomenon in Greek literature as well as in Greek science. Even in the tragedies the major figures have to make a choice, and, though we may be straying too far afield in saying this, the opposition between Greek and Barbarian, as in *The Persians*, between the law of the gods and the laws of the state, as in *Antigone*, the cult of Artemis and that of Aphrodite, as in *Hippolytus*, is a pretty good example of how the poets felt what the philosophers rationalized.

A geometrical universe is one in which time “makes no difference.” It is like a stone monument which may represent everything except that which is in process of becoming. The outstanding beauties of such a world are its perfect balance, its unity of form, its stability. If the world is to be imagined under the form of such a monument, those of its traits which cannot be incor-
porated into it will be thought of as blemishes, ugliness, evil. In
the famous Table of Opposites, one finds on one side all the
things which the makers of the Table admired, the odd, the
straight, the male, the immobile, and on the other side those
which they depreciated, the even, the curved, the female, the
moving. The odd is apparently better than the even because it has
two extremes and a middle term between them which acts, so
to speak, as the fulcrum upon which the ends are balanced. Most
curves seem to the unsophisticated mind to be without a formula
—the equations for curves are a discovery of Descartes in the
seventeenth century—and the only curve which the Greeks
seemed able to admire was the circle. The circle is admissible be-
cause it has a center from which all its circumferential points are
equidistant; it is, moreover, complete, returning upon itself. The
immobile is better than the moving, because it has a fixed position
in space, and space is absolute and bounded. But why is the male
better than the female? Is this because of the theory later ex-
pounded by Aristotle that woman merely furnished food for the
foetus, the male furnishing the seed out of which the infant
grew? Or was there simply a folk belief exemplified in the
treatment of women as subordinates which was expressed in the
Table of Opposites? Did people generally believe in the inferior-
ity of women, whereupon the author of the Table incorporated
them on the evil side, or did he have some other reason for doing
so? Here we have no evidence that I know of. In any event the
Table illustrates a doctrine which has survived down to our own
time, the doctrine that values are an integral part of nature, the
universe, whatever is real, and so on. Once they are a part of
the natural order, then their opposition must be accommodated to
whatever other opposition is discovered to be in it. And that op-
position is geometrical or spatial.

20 This belief is at least as early as Aeschylus. See Eumenides 658 f. To
kill one’s mother is not so bad as to kill one’s father, since the mother is not
really related to her children. But this would not have appeared in that play
in a speech of Apollo unless it were already a well-known idea generally
held.
ONCE ONE HAS established a method of thought which leads to a distinction between appearance and reality, it is natural to appraise the life of one's fellows in terms of the distinction. Are one's fellows living in the world of appearance or the world of reality; are they following the reason or succumbing to the charms of sensation? Is life itself worth living? Is contemporary life better or worse than life in ancient times? Are all men doomed to misery or are some destined to be happy? If the former, what is the reason for it? If the latter, how can they achieve happiness?

What is the good of civilization: are savages and perhaps even the beasts better off than civilized man? If so, what is there in human life which explains the failure of civilization to attain the good life? These are only a few questions which the rationalistic philosopher is accustomed to raise. In general the early Greeks maintained that if only men would follow the reason, they would be happy, not in the sense that they would be living a life of maximum pleasure, but in the sense that they would be morally better.

1. That the Greeks as a whole were not the careless pagans which they have sometimes been depicted as being is well known. In an essay which has become a classic, on the pessimism of the Greek, Butcher destroyed once and for all any notion that people may have had to the effect that the Greeks were less melancholy than other people. In Homer (Iliad vi. 12–19) we read how Axylus, the son of Teuthranus, who lived in a house by the roadside and entertained all who came by, was slain by Diomedes, but not one of his friends came forward at the moment of his death to meet the enemy and save him. Nestor (Iliad i. 260–8), an old man at the time of the Trojan War, could remember with regret the superiors of the warriors who were about him, superior in strength and courage at least. Pindar too (Pyth. iii) laments the disappearance of those days when “that rugged monster,” Chiron,

was alive. In the Golden Age, says Hesiod (Work and Days 109 ff.), men “lived like gods with hearts free from sorrow and remote from toil and grief. . . . And all good things were theirs. For the fruitful earth spontaneously bore them abundant fruit without stint. And they lived in ease and peace upon their lands with many good things, rich in flocks and beloved of the blessed gods.” And again, in a poem of which we have only a fragment, “They ate their meals in common and sat together, both the immortal gods and men.”22 But it is perhaps quite needless to extend this list.

Such sentiments are a mixture of a longing for the past and a definite commitment to the thesis that primitive life is better than civilized life. Such a thesis has been called “primitivism” by Lovejoy and has two forms, chronological and cultural. The former maintains that man’s first appearance on earth exhibited his best traits and the time in which he lived was the happiest period in history; the latter that the acquisitions of culture are bad. Both forms of primitivism may again be divided ideologically, though the divisions were not always clear-cut in the literary remains of the authors who espoused the ideas. One has first the kind of primitivism which Lovejoy called soft and then that which he called hard. The description of the Golden Race in Hesiod, a race which lived in ease, was typically soft; whereas in Aratus, the first men lived without war, foreign trade, or the eating of flesh and approached something like a hard condition. But whether the primitivist is chronological or cultural, hard or soft, he believes in a fall of man from his original condition, analogous to the fall of man in Scripture.

The Scriptural fall was presumably caused by man’s disobedience to the commands of God. Just what was symbolized by the eating of the fruit of the Tree of Knowledge is a matter of dispute and we are fortunately not engaged here in Biblical exegesis. But

among the Greeks there were various accounts of the loss of primeval felicity. In Hesiod's classic account of man's degeneration, no reason is given for the fall nor is human degeneration uninterrupted. The Iron Race, which is our own, is the worst of all five races, physically and morally. Its life is one of toil and war, both internal and external. Zeus will destroy its members "when they reach the point of being born with graying temples." Force will take the place of justice and evil passions the place of good. No one cause accounts for the disappearance of the successive races; no cause at all is assigned to the disappearance of the Golden Race; the Silver disappears because of overweening pride and impiety; the Bronze through internecine war; the Heroes through external war; the Iron will disappear by exhaustion and perhaps from evil-doing. That there were early beliefs, however, that the one cause of the fall was moral, is seen in such a passage as that referred to above from Theognis (1135 ff.), in which Hope alone is left to man, Good Faith, Moderation, and the Graces having fled the earth, "and no one dreads the deathless gods, and the race of pious men is past and justice and piety are no longer known." In Empedocles (fr. B128) the cause of degeneration is the entrance of Strife into the historical cycle; when Love was supreme, all was well. The fall apparently to his mind was not attributable to any wickedness on the part of our primordial ancestors, but rather to the inevitable cycle of history. Similarly in the myth of the dethroning of Cronus by his son, Zeus, and the identification of the Age of Cronus with the Golden Age, no reason is given for Zeus's action and, what is more surprising, in view of the character of Cronus, none is given for thinking of his reign as one of earthly happiness.

Such accounts of human history, with the exception of Empedocles', are obviously vague and philosophically trivial. But they do at least indicate that the early Greeks were hardly satisfied with life as they lived it. Whether they believed that the Fates were intrinsically misanthropic or that the gods were jealous, as in the story of Prometheus, or merely that there was more evil in the
world than good and no explanation could be given for it, there was a prevailing atmosphere of melancholy which could be breathed by those who were not congenitally blind to evil. The same depreciation of humanity is found in the early philosophers. The very fact that most of us are content to follow the way of opinion, the vagaries of the senses, is enough to make a philosopher who is a rationalist look down with disdain on his fellow mortals. The existence of a set of taboos, as drawn up by the early Pythagoreans, is some evidence, if slight, that they were uneasy when following the ordinary life of men and felt they must protect themselves from those evils which might lurk in the eating of certain foods or in the performance of certain acts. Such an attitude need not be based upon a rational critique of life, but if one has already accepted a rationalistic technique and applies it to common practices, then it is likely that one will reject a good part of life as senseless.

2. The existence of Greek tragedy is another indication that the life of man may contain an element of defeat which cannot be avoided. This element is not always the same by any means; we have no single explanation to offer of what makes a drama a tragedy. But there is no extant tragedy which does not present the life of its protagonists as doomed to disaster from the start. Sometimes, as in The Persians, the disaster is attributable to too great self-confidence, the kind of self-confidence which induces a great king to attempt the conquest of a smaller but more upright people and to link together two continents which the gods had separated by water (Persae 739 ff.). Sometimes, as in the Oedipus trilogy, it comes from a man’s unwittingly committing a crime which he could not avoid. Sometimes, as in Antigone, it emerges from a conflict between two equally legitimate claims, the claim of Heaven and that of Earth. And sometimes, as in Hippolytus, it comes from an exaggerated worship of one divinity to the exclusion of a rival divinity. But whatever the precise cause of the tragedy may be, its effects were unavoidable. In Prometheus Bound, which to be sure is only one play out of a group of
three, the hero is punished for having been man’s benefactor; but here his crime is to have thwarted the will of Zeus. In *Agamemnon* the hero is murdered by his wife for having sacrificed her daughter, but she herself is murdered in the *Choephoroe* for having slaughtered her husband. Even in *Antigone*, of which we usually think of the girl as the main character, Creon too is punished and neither the proponent of the law of the gods nor the proponent of the law of the state is rewarded. Thus it seems wrong to say, as is so often said, that Fate is the preponderant force.

One might with more justice say that the tragic poets were all convinced that every act had inevitable consequences and that any decision would entail effects which were unavoidable. In some tragedies the main characters are aware of this and say so. Thus Prometheus in *Prometheus Bound*, though he rebels against the cruelty of Zeus to man, nevertheless knows that his benefactions were bound to lead to catastrophe, and in his very moving opening speech he makes this clear (101 ff.). In short, this world was to the early dramatists a rational world, as it was to the early philosophers. By this I mean simply that it was theoretically possible to know how events were linked together and, if one did know this, one would see that there was no escaping the consequences of one’s decisions. The outstanding exception to this generalization is the *Eumenides*, which ends with a debate between the Furies and Apollo, a debate which is won by Apollo. This victory could not be foreseen by the people involved in the drama. But this victory is not irrational; it is not the result of a miracle which upsets the laws of reason. It is the triumph of the reign of Zeus over that of Cronus, though it is not put in those words by Aeschylus.

It is also notable that the Greek tragedy was not a conflict of individual characters, of heroes against villains. There are no Iagos, no Edmunds, no King Claudius, as far as I have been able to discover, in the Greek tragedies. The villain is man’s fate. This does not mean that the tragic poets did not recognize

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28 But note that there are more lost than extant tragedies.
the existence of wicked people. On the contrary, the most horrible crimes are committed. But it is made clear that such crimes, as in the Oedipus trilogy, are committed unwittingly, or, as in the Oresteia, as just punishment for the evil done by others. But it is possible, if not certain, that the poets were thinking that punishment was to be given by the gods, not by men. To take the law into one's own hands seems to have been the most prominent crime. And yet each man has a will of his own which guides him. It is only when man's will is consonant with the will of the gods that he will live out his life in peace. But sometimes the will of the gods is concealed or known only through ambiguous oracles. Man does not always know what they have in store for him. Consequently he acts according to his personal insight and therefore often meets a tragic doom. What is important for our purposes here is not that men run headlong into disaster in ignorance of why. For the historian of philosophy it is more important to observe that there existed a feeling that concealed laws governed the behavior of man as they did that of everything else, or, to use one of the favorite clichés of the school, that man was a part of Nature. If he could reach a knowledge of those laws, he might be able to better his condition in life. But in general he neither wishes to nor is prepared to. The philosophers were the few who tried to instruct the many in the rationality of nature.

3. Man therefore is envisioned as groping in the dark and sometimes as content to do so. The tirades of some of the early philosophers make this clear. Xenophanes pours out his scorn on the athletes, the swift runners, the winners of the pentathlon, the boxers, the wrestlers, all of whom Pindar was to celebrate a century later. “Better,” he says (fr. B2), “is our wisdom than the strength of men and horses.”24 He has nothing but contempt for those of his fellows who have taken their ideas from Homer and Hesiod, who have “attributed to the gods all sorts of things such

24 According to Burnet, op. cit., p. 117, n. 2, “art” would be a better translation than “wisdom.”
as are shameful and disgraceful among men, stealing and adultery and deceit" (fr. B11). For, he goes on to say, men believe the gods to be like them, to be begotten, to wear clothes, to speak with voices, and have bodily frames (fr. B14). And, he adds in his best-known fragments (frs. B15, 16), "If oxen and horses and lions could paint with their hands and make things as men do, the horses would give their gods the form of horses, the oxen would make them like oxen. . . . The Ethiopians make their gods snub-nosed and black and the Thracians blue-eyed and fair-haired." These absurdities are attributable to man's ignorance, for "The gods did not teach men all things at the beginning, but in time men find out what is better by seeking" (fr. B18). It is this search for truth which will raise men out of their state of ignorance; the burden is put upon them. And presumably the search is to be guided by reason. Yet Xenophanes is no dogmatist, for the skeptic Sextus Empiricus reports him as saying, "No man has been born nor will one ever exist who knows for certain about the gods and what things I speak of, for even if he should happen to speak the perfect truth, he himself does not know it to be so" (fr. B34). Yet he himself seems sure that he has discovered at least one perfect truth, namely that there is but one god, unlike mortals in every way, and governing without toil all by his mind alone (frs. B23, 25).

Heraclitus is even more scornful of his fellow men than Xenophanes is. "The crowd," he says (fr. B17), "give no thought to what they experience, nor do they learn if they are taught, but think that they do." He even puts Homer, Hesiod, Pythagoras, and Xenophanes into the same class of ignoramuses, saying that "much learning does not develop intelligence" (fr. B40); otherwise these four polymaths might have been wise. For "Wisdom is but one thing: to understand the thought by which all things are governed [or steered] through all things" (fr. B41). This wisdom apparently belongs to God alone, for to him (fr. B102), "all things are fair and good and just, whereas men think some things unjust and some just." It may be that this fragment, which
comes to us from Porphyry (third century A.D.), is a simple statement of his faith that *sub specie aeternitatis* there is neither good nor evil. The odd thing is that he does not say that to God there is no good or evil, but that the distinction between good and evil exists on the human plane alone. It is worth pointing this out, since according to his general metaphysics, in so far as we can reconstruct it, good and evil ought to coalesce and be one, in which case to God there would be neither one nor the other. Here one can only raise a question: is he accepting the Greek commonplace that according to Nature everything is good and that man will find his goodness in "following Nature"? Just what following Nature would consist in is not clear; would it be accepting sensory evidence or knowing the cosmic law? In any event he insists in some passages on turning away not merely from this man's opinion or that man's, but from human opinion as a whole. "The human way has no wisdom," he says (fr. B78), "but the divine has." But again he gives us no clue in the surviving fragments to just what the divine way would be.

Elsewhere (fr. B104) we find him castigating men who put their trust in the poets and the mob, "not knowing that many are evil, few good." As for his immediate fellow citizens, the Ephesians, they "from their youth upward" ought to be strung up and made to leave the city to adolescents, "for they have exiled Hermodorus, the most useful man among them, saying, Let there be no most useful man among us, or else let him go elsewhere and live among others" (fr. B121). Hermodorus, according to tradition, went to Rome after his expulsion from Ephesus and is said to have taken part in drawing up the Twelve Tables. If this tradition is founded on fact, Heraclitus' contempt for the Ephesians may be based on their reluctance to accept a codified set of laws, such as seem to have been drawn up in many ancient cities during the seventh and sixth centuries. These laws acted to freeze

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26 For the evidence, see Burnet, *op. cit.*, pp. 131, n. 1, and 141, n. 1.
custom and we are told that the ancient world during this period was overthrowing the ruling power of the aristocracies and instituting something resembling popular government. It is probable that Heraclitus was a supporter of the old regime. To him (fr. B44) the people ought to fight for its laws as for its city walls. One surmises that the law to his mind was like the Law which steers the stars in their courses, the Furies which would pursue the Sun if it stepped out of its orbit.

In Empedocles we find a similar melancholy over man's fate, but it is expressed with none of the contempt expressed by Heraclitus. As we have said, the cosmos is going through a series of cycles in which Love and Strife have supremacy alternatively. In the reign of Love, the Golden Age, there was no war, no internal conflict, and even blood sacrifice was unknown (fr. B128). As in many other accounts of primitive times, men lived at peace with the beasts (fr. B130). But since Strife inevitably takes over the rule of the cosmos from Love, man is doomed to live in a period of bloodshed and even of human sacrifice (fr. B137). The one hope which a man living in an evil period of the cycle may have is the hope of rebirth in a happier time and in a happier form. There is one fragment (fr. B146), for instance, which comes to us from Clement of Alexandria (second century A.D.), which says that the souls of the wise will become gods. These wise men are presumably the prophets, composers of hymns, healers, and chiefs who will be welcomed to live among the gods. One may guess that such men arise because of the waning of Strife; at any rate they do appear as man's benefactors, somewhat like the culture heroes, and are a prefiguration of what life might be under the rule of Love. One might hazard the further guess that if Empedocles were asked for his appraisal of human life, he would reply that it would depend on what part of the cycle we were living in. But since it was customary for men who believed in the existence of a Golden Age also to believe that it was either in the remote past or that it would come into being in the equally remote future, Empedocles would have believed that his contem-
poraries were living in the Iron Age, as Hesiod did before him.

One would expect men who had definite ideas about the value of life to have written books on good and evil, or those corrective essays on human behavior which are written to reform the human race. We have, however, no fragments from any book on ethics written before the fifth century. Among the philosophers whom we have been considering, it is oddly enough Democritus, the atomist and materialist, whose ethical fragments survive. Odd, since after all, if only atoms and void are real, why should one worry about values?

Democritus, like most materialists, identifies goodness with pleasure and evil with pain (fr. B188). But unfortunately men seem to find their pleasures in passing things rather than in lasting (fr. B189). How then is one to discover what is of lasting pleasantness? The answer is, through the use of the reason (logos) which dwells within one's soul (fr. B187). Just how the reason operates is not clear, but there is some evidence that it accumulated experiences which would show it how some pleasures or goods are followed by pains or evils. It is not, if this evidence is worth anything, a purely a priori matter. According to Stobaeus, Democritus (fr. A167) called the state of mind which would characterize the happy man by a variety of names: happiness, cheerfulness, well-being, harmony, balance (symmetry), and peace of mind (ataraxia), terms which are also found in the writings of the Epicureans. Whether he actually used these particular terms or not, he apparently was interested in achieving a kind of inner calm which would result from a man's reflections, seeking pleasures without giving a thought to their consequences. If he believed that such advice was needed, it is obvious that he also thought most men to be heedless in the way they lived. He seems on better authority to have maintained that they are also burdened with superstitious fears, such as the fear of death (frs. B199, 206). Lacking understanding they wish to prolong life even if it is lived without pleasure (fr. B201). Such sentences are too short to be more than suggestions of his type of criticism, but in any
event it is clear that he thought he had a way of improving man’s lot and that he felt it needed improvement. This desire for an untroubled mind grew more and more common in the philosophic literature of antiquity, though, as it is hoped we shall see, the power of reason to satisfy the desire weakened and religious faith took its place. How deeply the philosophers felt the pressure of political revolution and social change, how poignantly they felt those sorrows which invasions and military defeats bring with them, we can only surmise. But it is indubitable that in their writings they all agreed that the solution for man’s ills was to be found not in social organization against evil but in self-reliance. Their hatred of The Many is symptomatic of their individualism. A single man could find salvation for himself without the help of a church, a school, or any other institution. This, we hope, will become clearer when we come to discuss the ethical writings of the Epicureans and Stoics. Life then is to be appraised in accordance with the amount of harmless pleasure which it affords, according to Democritus. Harmless pleasure is pleasure which does not beget pain. And when it is found, man will have acquired peace of mind, an unruffled spirit, and final happiness.

It is clear then that the early philosophers, among whom we have intentionally included Democritus, had no lofty idea of the general run of their fellows. They believed, moreover, that the sole corrective to the evils of life was within the individual, not in the hands of fate, the gods, or of society. It has been pointed out by others that the Greeks as a whole were extreme individualists, having no organized religion, no church, but a collection of deities each of whom had his own cult. The advantage of this was the greater freedom of conscience which it encouraged in the individual; the disadvantage that it permitted the mob, acting in the name of tradition, to persecute the philosopher. Similarly in political affairs there seems to have been no noticeable loyalty to the city. The accounts of political leaders who did not hesitate to turn their coats, when it was to their profit to do so, are aston-
ishen. In intellectual matters the philosophers also differed on doctrinal theses, but on the whole they at least agreed that reason, in the sense of straightforward logical investigation, without the help of intuition, allegory, “the heart,” revelation, or any other nonrational or suprarational insight, would show them the way to truth. Once one understood the difference between appearance and reality, one could adjust one’s way of life to reality. And that would be the answer to the most urgent problems.

27 The list of such men would include Hippias, the son of Pisistratus, who was to have been Gauleiter of Athens under the Persians, if they had won in 490; Alcibiades, whose shifts of allegiance are notorious; Themistocles, who prepared himself by a year’s study for service under the son of Xerxes; Iphicrates, who served Thrace against Athens; and perhaps Antiphon and Theramenes, though opinions differ about their characters.