THE ART AND THOUGHT OF HERACLITUS

An edition of the fragments with translation and commentary

CHARLES H. KAHN

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CHARLES H. KAHN
Professor of Philosophy, University of Pennsylvania

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CAMBRIDGE UNIVERSITY PRESS
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LONDON NEW YORK NEW ROCHELLE
MELBOURNE SYDNEY

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Preface

Heraclitus was a great prose artist, one of the most powerful stylists not only of Greek antiquity but of world literature. He was also a major thinker, perhaps the only pre-Socratic philosopher whose thought is of more than historical interest today. His reflections upon the order of nature and man's place within it, upon the problems of language, meaning and communication still seem profound; and many of his insights will remain illuminating for the modern reader, not merely for the specialist in ancient thought.

The aim of the present work is to demonstrate the truth of these claims by making Heraclitus accessible to contemporary readers as a philosopher of the first rank. With this in mind I have tried to rearrange the fragments in a meaningful order, to give a translation that reflects as far as possible the linguistic richness of the original, and to provide a commentary designed to make explicit the wealth of meaning that cannot be directly conveyed in a translation but is latent in Heraclitus' own words, in his tantalizing and suggestive form of enigmatic utterance.

The Greek text is given here together with the translation, since any interpretation is obliged to make continual reference to the original wording. And I think it should be possible to read the fragments in a meaningful order, even if one reads them in Greek. No attempt has been made to produce a new critical edition, and I have generally followed the text of Marcovich where he diverges from Diels. But in some nine cases my text differs from both Diels and Marcovich in such a way that the interpretation of the fragment is altered, sometimes radically (see p. 26). The notes to the translation are designed to provide the minimum of information required to understand Heraclitus' words without a knowledge of Greek. The commentary is there for those readers who would go further. But in the commentary too all Greek words have been given in transliteration, and the element of scholarly controversy has been kept to a minimum (although I have tried to acknowledge my debt to my predecessors, and to take

some account of their views even where I disagree). The aim throughout has been not to add another book to the secondary literature on Heraclitus but to make the thought of Heraclitus accessible to the general reader in the way that a good translation and commentary on the *Divine Comedy* tries to make the poetry of Dante accessible to one who knows little or no Italian.

The comparison to Dante is chosen deliberately. Despite the vast difference in scale between the two works, and despite the fact that our text is only partially preserved, even from these shattered remains we can see that the literary art of Heraclitus' composition was comparable in technical cunning and density of content to that of Dante's masterpiece. As a thinker, Heraclitus was even more original. And in both cases the reader who approaches his author without any scholarly assistance is likely to get quickly lost. May this serve as my excuse for such a lengthy commentary to such a brief text.

The first draft was written in Athens in 1974–75, when I held a senior fellowship from the National Endowment for the Humanities and was in residence as visiting professor at the American School of Classical Studies. I am happy to express my appreciation to the Endowment for its support, and to thank the American School, its then director James McCredie, and the staff of the Blegen Library for their friendly help and hospitality. I am greatly obliged to the Research Center for Greek Philosophy and the Academy of Athens for cordial assistance, and in particular to Dr E.N. Roussos of that Center who permitted me to use his typescript of Wiese's dissertation, *Heraklit bei Klemens von Alexandrien*. Among the colleagues who improved this work by their criticism I must mention G.E.L. Owen and Edward Hussey. The translation has benefited from suggestions by Diskin Clay, Jenny Strauss Clay, Martin Ostwald and John van Sickle. Barbara Hernnstein Smith kindly served as my Greekless reader, and made many valuable suggestions for a more idiomatic translation as well as for the presentation of notes and commentary. Finally, both the reader and I are indebted to R.J. Mynott of the Cambridge University Press for showing me how to condense the commentary; it is not his fault if it is still a bit long.

June 1977 Charles H. Kahn

General introduction

1 The Man, the Time, and the Place

The details of Heraclitus' life are almost completely unknown. Reliable information is limited to the fact that he was a native of Ephesus, on the coast of Asia Minor north of Miletus, and that his father's name was Bloson. His approximate date is fixed by a synchronism with the reign of Darius, 521 to 487 B.C.; his traditional 'acme' in the 69th Olympiad, 504–501 B.C., is probably nothing more than a simplified version of the same synchronism.[1] The rough accuracy of this date, on the threshold of the fifth century, is guaranteed by fragment XVIII (D. 40), where Pythagoras, Xenophanes, and Hecataeus are cited as older contemporaries or figures of the recent past. All three men seem to have died between 510 and 480 B.C.[2] The book dates itself, then, in or near this period. The same approximate date could be inferred from the presence or absence of various philosophical influences: there are clear debts to the sixth-century Milesians, to Pythagoras and Xenophanes, but none to Parmenides or to any thinker of the fifth century.

The 'life' of Heraclitus by Diogenes Laertius is a tissue of Hellenistic anecdotes, most of them obviously fabricated on the basis of statements in the preserved fragments. (The unusually disgusting reports of his final illness and death reveal a malicious pleasure in mocking a figure whom the Stoics venerated as the source of their own philosophy.) Suggestive, if not entirely credible, are the stories which describe Heraclitus as refusing to engage in politics or to legislate for Ephesus, in sharp contrast with the public activities of most early philosophers. Such stories may reflect no more than the expressions of contempt for his fellow-citizens found, for example, in LXIV (D. 121). A related anecdote, probably more worthy of belief, tells us that he relinquished the hereditary and largely honorific title of 'king' to his younger brother.[3] If true, this would imply that Heraclitus was the eldest son of one of the most aristocratic

families in Ionia, the Androclids, who traced their descent back to Androclus, son of King Codrus of Athens, reputed leader of the Ionian migration to Asia Minor and founder of Ephesus.

Heraclitus is said to have deposited his book as a dedication in the great temple of Artemis, where the general public would not have access to it.[4] The dimensions of this archaic Artemesium, built not long before Heraclitus' birth, are still recognizable in the picturesque remains of a later rebuilding: the sheer scale of the enterprise is evidence for the wealth, the power, and the civic pride of Ephesus in the middle of the sixth century.[5] The temple was constructed about 560 B.C. 'in emulation of the temple of Hera which had just been built on Samos, but larger – indeed one of the largest ever to be attempted by a Greek architect'.[6] This architectural rivalry between the new Ephesian temple and its slightly older neighbor, the Heraion of Samos, prefigures a generation in advance the philosophic emulation that will oppose Heraclitus to his famous Samian predecessor, Pythagoras. (Compare XVIII, D. 40 and XXV–XXVI, D. 129 and 81.)

Like other Ionian cities of Asia Minor, the destiny of Ephesus in the sixth century was linked to the rise of Lydia as dominant power under Croesus, and to the latter's overthrow by Cyrus the Persian in 547 or 546 B.C. Ephesus seems to have remained on good terms with the ruling powers in the east. Croesus of Lydia contributed to the construction of the Artemesium. And when her great neighbor Miletus was destroyed by the Persians after the disastrous Ionian revolt of 494, Ephesus was spared. In the earlier period Miletus had surpassed all other Ionian cities in maritime enterprise and colonial expansion, while serving at the same time as the birthplace for western science and philosophy: it was in sixth-century Miletus that Thales, Anaximander, and Anaximenes created the tradition of natural philosophy. The destruction of Miletus at the beginning of the fifth century left Ephesus as the major Greek city of Asia Minor, a position she retained until the end of antiquity, as we can see today from the resurrected splendor of her Roman ruins.

It was in this opulent city, in the days of rivalry between Ephesus, Samos, and Miletus, under Persian control but before the unsuccessful Ionian revolt, that Heraclitus grew up as the eldest son of the noblest family in the city. (The presence of the Persians in and around Ephesus may be reflected in a scornful reference to *magoi* in D. 14. See below on CXV.) We have no information on the struggles between the poor and the rich, the pro-Persian and the anti-Persian parties that must have dominated the civic life of Ephesus at this time.

Heraclitus' attack upon his fellow-citizens for the expulsion of Hermodorus (in LXIX, D. 12) certainly presupposes local autonomy and probably also some form of popular government. Heraclitus will himself have had small sympathy for democracy understood in the Greek sense as rule by the greater number, or by the lower classes, as we see from his contemptuous reference to the *dēmos* or 'mob' in LIX (D. 104). On the other hand, there is no reason to think of him as an unconditional partisan of the rich.[7] The fragments and the later anecdotes agree in portraying him as an observer *audessus de la mêlée*, withdrawn from competing factions. I imagine his civic attitude by analogy with the quasi-neutral stance of Solon, but without any of the active political involvement of the latter. Solon saw himself as a mediating force, opposing the excesses of the rival parties, 'standing like a boundary mark between the warring factions' (fr. 25) in order to preserve the common interests of the city as a whole. So Heraclitus, who discovered in what is shared or common to all (*to xynon*) the essential principle of order in the universe, recognized within the city the unifying role of the *nomos*, the structure of civic law and moral custom which protects the demos as the city wall protects all the inhabitants of the city (LXV, D. 44). The only political attitude which we can safely extrapolate from the fragments is a lucid, almost Hobbesian appreciation of the fact that civilized life and communal survival depend upon loyalty to the *nomos*, the law in which all citizens have a share (XXX, D. 114), but which may be realized in the leadership of a single outstanding man.[8]

2 The Book

Heraclitus is, as Diels put it, 'the most subjective and, in a sense, the most modern prose author of antiquity'.[9] A loner among a gregarious race, he seems to have had no personal disciples or associates. (One anecdote has him fleeing human society in disgust and going to live like a hermit in the mountains.) In a literary age which we think of as still primarily 'oral', Heraclitus' influence made itself felt exclusively through the power of his written word. Within a generation or two 'his book acquired such fame that it produced partisans of his doctrine who were called Heracliteans'.[10] The best known of fifth-century Heracliteans is Cratylus of Athens, a rather taciturn participant in the Platonic dialogue that bears his name, whose eccentric ideas are reported more fully by Aristotle (*Metaphysics* 1010a11). Aristotle strangely names Cratylus as one of Plato's teachers (ibid.

987a32), perhaps because he regarded him as a source of the Heraclitean influence which he rightly recognized in Plato's own thought. The stylistic impact of Heraclitus' book is well documented in fifth-century literature, notably in the fragments of Democritus, several of which seem to be composed as a direct response to statements by Heraclitus.[11] The Hippocratic treatise *On Regimen*, probably from the same period, shows a more systematic attempt to imitate the enigmatic, antithetical style of Heraclitus' prose.[12] There is enough evidence for widespread interest in Heraclitus among the intellectuals who represent what is called the Enlightenment of the late fifth century B.C. to establish the plausibility, if not the literal truth, of the story that it was the tragedian Euripides himself who gave the book to Socrates and asked for his opinion of it.[13]

It is in the fourth-century works of Plato and Aristotle that we find the first detailed discussion of Heraclitean doctrine, but few literal quotations from his book. The doctrine itself is seen from a perspective far removed from the intellectual atmosphere of the early fifth century. For Plato Heraclitus is the theorist of universal flux (*panta rhei* 'all things flow') in contrast to Parmenides, the partisan of a fixed and stable reality. For Aristotle Heraclitus was a material monist who derived the entire physical world from fire as its underlying element. Both characterizations cast a long shadow over later readings of Heraclitus' text. Before turning to the book itself, I will briefly survey its influence over the next few centuries and indicate the principal sources from which our knowledge of it is derived. Like all Greek prose authors before Herodotus and all philosophical writings before Plato, the original text of Heraclitus is lost. We are entirely dependent upon quotations, paraphrases, and reports in later literature that happens to have survived the collapse of ancient civilization and the destruction of its papyrus libraries.

A full account of Heraclitus' doctrine as he understood it, along the lines traced by Aristotle, was given by the latter's pupil Theophrastus in his great doxographical survey, *The Opinions of the Natural Philosophers* (*Physikôn Doxai*). Theophrastus' own work is lost, but a good excerpt from the relevant sections, including close paraphrases of several extant fragments, is preserved in Diogenes Laertius' *Life* of Heraclitus, IX.7–11 (translated below in Appendix IIA). The high point of Heraclitus' philosophical influence was reached a generation later in the work of Zeno, the founder of the Stoic school in the early third century B.C., and in that of Zeno's successor Cleanthes. Cleanthes wrote a commentary on Heraclitus in

four books, of which no certain trace has been preserved; but the surviving sections of his famous *Hymn to Zeus* contain elaborate echoes of Heraclitean phrasing and imagery.[14] The Stoics saw Heraclitus through the deforming lens of their own system, but that system was itself based upon a deep study of his written words. I believe the Stoic interpretation is, in its broad outlines, more faithful to Heraclitus' own thought than is generally recognized. In their dogmatic way, and without his subtlety of thought and expression, the Stoics are the true Heracliteans of antiquity.

Interest in Heraclitus remained intense throughout the Hellenistic period, partly but not exclusively as a result of Stoic influence. Diogenes (IX.15) lists seven other authors who wrote commentaries on the book.[15] By the fourth century B.C. Heraclitus had acquired the status of a literary classic, a status which he kept as long as ancient civilization endured.

The various full-length commentaries are lost, and the earliest extant author to quote extensively from Heraclitus is Plutarch, the Platonic philosopher and biographer of the late first century A.D. The work was still familiar in the next century, as we can see from many quotations and from the witty parody by Lucian in his *Sale of Philosophic Lives*, which reflects – and presupposes on the reader's part – an accurate knowledge of the text.[16] The most abundant and most faithful quotations are found in the works of two Christian bishops writing about A.D. 200: Clement of Alexandria and Hippolytus of Rome. Several good verbatim citations are preserved by another early Church father, Origen of Alexandria. Plotinus in the third century A.D. and other later Neoplatonists also quote from Heraclitus, but they are not much concerned with literal citation. Our last important source of original fragments is the anthology of wise sayings on moral topics put together by John Stobaeus in the fifth century A.D., almost a millenium after the original composition of the book.

Stobaeus is probably drawing upon earlier anthologies; and other late authors may have got their quotations at second hand. (Origen tells us he is citing Heraclitus from the pagan philosopher Celsus; and Porphyry once quotes the text from a neo-Pythagorean named Numenius.) But I see no reason to doubt that down to the time of Plutarch and Clement, if not later, the little book of Heraclitus was available in its original form to any reader who chose to seek it out. Some authors obviously made selections of quotations for particular purposes, like the excerpts in Hippolytus (who wants to show that

Heraclitus is the source of a Christian heresy) and in Sextus Empiricus, who presents Heraclitus as a Stoic rationalist in epistemology. The selection of quotations in Diogenes' *Life* of Heraclitus (IX.1–2) is motivated by the special interest in illustrating the philosopher's personality. The existence of such excerpts has led some modern scholars to suppose that the work circulated in Stoic or Hellenistic 'editions'. But it is one thing to cite a few passages for some special purpose, and another thing to edit or rearrange the text as a whole. For the latter there is really no evidence. The book itself must have been so short that the project of an abridged edition would have had no point.[17] Plutarch and Clement both know Heraclitus by heart, and frequently quote him from memory. It seems obvious that these two extraordinarily learned and literary authors each possessed his own copy of the book. The same may be true for others who quote from memory, as Marcus Aurelius does in the second century A.D. and Plotinus a century later.

Is it possible to form some general idea of a work that was so continuously read, quoted, imitated, and interpreted for more than seven centuries, and from which we have nearly a hundred literal citations? Early editors, such as Bywater, tried to group the fragments by subject matter.[18] After 1901, however, the standard arrangement became that of Diels, who lists the fragments in alphabetical order according to the name of the author citing them. This apparently irrational procedure can be justified on sound philological grounds. Recognizing that any arrangement by subject matter was to some extent arbitrary, Diels wished above all to avoid imposing any personal interpretation upon his edition of the texts. In fact, by the atomistic character of his arrangement he has largely succeeded in imposing his own view of Heraclitus' work as lacking in literary structure. For Diels was motivated not only by the impossibility of reconstructing the original sequence of the fragments. He also called attention to their aphoristic style, their resemblance to the sayings of the Seven Sages, and (with Nietzsche's *Zarathustra* in mind) he suggested that these sentences had originally been set down in a kind of notebook or philosophical journal, with no literary form or unity linking them to one another. He thus implied, after all, that the chaotic pattern of his arrangement gave a true picture of Heraclitus' own composition. In the case of Heraclitus, arrangement and interpretation are inseparable from one another, as Diels saw in the work of his predecessors. His mistake was to imagine that his own order could be an exception.

The arrangement of the fragments presented here is based upon a

different assumption: that Heraclitus' discourse as a whole was as carefully and artistically composed as are the preserved parts, and that the formal ordering of the whole was as much an element in its total meaning as in the case of any lyric poem from the same period. The true parallel for an understanding of Heraclitus' style is, I suggest, not Nietzsche but his own contemporaries, Pindar and Aeschylus. The extant fragments reveal a command of word order, imagery, and studied ambiguity as effective as that to be found in any work of these two poets. I think we can best imagine the structure of Heraclitus' work on the analogy of the great choral odes, with their fluid but carefully articulated movement from image to aphorism, from myth to riddle to contemporary allusion. Yet the intellectual unity of Heraclitus' composition was in a sense greater than that of any archaic poem, since its final intent was more explicitly didactic, and its central theme a direct affirmation of unity: *hen panta einai*, 'all things are one'. The content of this perfectly general formula seems to have been filled in by a chain of statements linked together not by logical argument but by interlocking ideas, imagery, and verbal echoes. Theophrastus found the result 'incomplete and inconsistent', but he was looking for a prosaic exposition of physical theories.[19] Heraclitus is not merely a philosopher but a poet, and one who chose to speak in tones of prophecy. The literary effect he aimed at may be compared to that of Aeschylus' *Oresteia*: the solemn and dramatic unfolding of a great truth, step by step, where the sense of what has gone before is continually enriched by its echo in what follows.[20]

That Heraclitus' discourse possessed an artistic design of this type can scarcely be demonstrated, but is strongly suggested by clear evidence of artistry in every fragment where the original wording has been preserved. The impression that the original work was a kind of commonplace book, in which sentences or paragraphs were jotted down as they occurred to the author, is largely due to the fact that Heraclitus makes use of the proverbial style of the Sages, just as he invokes the enigmatic tones of the Delphic oracle. But Heraclitus has many literary strings to his bow; he does not always speak in riddles or aphorisms. Among the quotations are four or five long passages of several connected sentences. Fragment I is a carefully wrought proem, which suggests the beginning of a well planned book.[21] XXX (D. 114) exhibits a complex literary structure elaborated by word play, phonetic resonance, and syntactical ambiguity. And other long quotations show that Heraclitus' prose could be supple and ironic as

well as massive and stately. XXII (D. 56) reports a traditional story in a narrative style that suggests the naive manner of a folk tale. CXVII (D. 5) is unique in its unrestrained sarcasm on the subject of blood purification and praying to man-made gods. The nearest parallel to such plainness of speech is in LXIV (D. 121), where the outburst on the men of Ephesus who deserve hanging utilizes, but does not exemplify, the proverbial style of wisdom literature.

This diversity of artistic technique does not prove that the work as a whole was carefully composed. It does indicate that Heraclitus was master of his medium and could impose an artistic shape upon it if he chose. And there is a general consideration that tells strongly in favor of his having done so. If we survey the plastic and literary arts of archaic Greece, we are struck in almost every case by the remarkable sense of form that characterizes the individual work. Since the pre-classical notion of poetic structure does not coincide with the logical or psychological pattern of beginning, middle and end that is typical of later Greek literature, scholars have not always recognized this older style of literary form, just as they once failed to appreciate the peculiar dynamism of archaic sculpture. But today this notion of archaic form has become familiar to us again, in part from its rediscovery by artists working in our own century. Whether we are considering an ode of Pindar, a narrative in Herodotus, or a sculptured frieze, it would be difficult to find an art work from archaic Greece that is finely wrought in detail but unshapely as a whole.

The preceding argument tends to show that the fragments were originally arranged in a significant order. It does not claim to show that the original order has been recovered here. The present arrangement is largely my own contrivance, the result of much trial and error, and it has no special title to historical authenticity. I have worked on the assumption that, if Heraclitus' own order was a meaningful one, it is the interpreter's task to present these incomplete and shattered fragments in the most meaningful order he can find. How close I have come to duplicating Heraclitus' own order may depend in part upon how successful I have been in grasping his meaning.[22]

There are, however, a few formal points of reference on which I have relied. The existence of an introduction is guaranteed by fragment I, which suggests that Heraclitus' initial emphasis was upon men's failure to grasp the universal *logos* which he proclaims. Accordingly, I have grouped the fragments of a critical and polemical nature at the beginning. Following a hint of Reinhardt, I take XXXVI (D. 50) as the transition from this introduction to the exposition

proper.[23] For the structure of the exposition itself, there is one much-maligned piece of external evidence: 'the book is divided into three discourses (*logoi*), on the universe, on politics [and ethics], and on theology'.[24] I have followed this clue by presenting the more explicitly cosmological statements immediately after the introductory polemic, and reserving for the end those fragments which refer to cult and deity. Since in my view Heraclitus' psychology is inseparable from his theology, I have put most of the fragments dealing with the psyche immediately before the last section on the gods.

3 The Doctrine: Heraclitus and his Predecessors

From the time of Cratylus and Plato with their special interest in the doctrine of flux, down to the Christian Church fathers who were fascinated by a *logos* that they could so easily assimilate to the word that was 'in the beginning with God', every generation and every school construed the doctrine of Heraclitus from its own particular vantage point. We will return to the deeper problems of hermeneutical perspective in the introduction to the commentary, 'On reading Heraclitus'. Here I want only to provide a modest historical corrective: a survey of the early Greek tradition that can help us to see the thought of Heraclitus against the intellectual background of his own time and place.

As a first approximation, I distinguish two traditions in the intellectual heritage of Heraclitus, that is, in the body of thought he is responding to and which he is, by this very response, in the act of transforming. On the one hand there is the popular tradition of wisdom represented by the poets and by the sages of the early sixth century, including Solon and Bias. Note that Solon was both a poet and a sage, and that the term *sophos*, which means 'wise (man)', originally referred to skill in any art, and particularly in the art of poetry. On the other hand, there is the new technical or scientific culture which took shape in Miletus in this same century. Under circumstances which we can only dimly perceive, natural philosophy began as the work of a handful of men, the circle around Thales and Anaximander. (The origin of the new tradition as an offshoot from the older one, as well as the failure of the ancients to distinguish between the two, is symbolized by the figure of Thales, who is regularly counted among the Seven Sages but also named as the first natural philosopher.) By the time of Heraclitus at the end of the sixth century, the scientific tradition had begun to spread from Miletus to

other neighboring cities (Samos, Colophon, Clazomenae, Ephesus) and had also been carried to the distant west by Ionian refugees. Thus sometime in the last half of that century Pythagoras migrated from Samos to Croton and Metapontum on the southern shores of Italy; perhaps a bit later, Xenophanes travelled from Colophon to Sicily and to Elea on the west coast of Italy, below Paestum and Naples. In the fifth century this philosophical culture will be brought to Athens by such men as Anaxagoras (from the Ionian city of Clazomenae) and the Sophists (including Gorgias, from Sicily). The consequent generalization and popularization of these new ideas, above all in Athens in the so-called Enlightenment of the late fifth century, is reflected for us in the extant works of Euripides, Aristophanes, and Thucydides, and in the earliest Hippocratic treatises. It is carried on by the orators, philosophers and scientists of the fourth century. Through the work and influence of Isocrates, Plato, and Aristotle, and mathematician-astronomers like Eudoxus of Cnidos, this new scientific and philosophic culture became the intellectual heritage of the whole civilized west.

It is necessary to bear in mind the fact that this scientific culture, which every educated person today can take for granted no matter how little he knows of its technical detail, was something quite new in Heraclitus' day and still restricted to a small circle of initiates. For the most part, the overwhelmingly dominant culture was what I shall call the popular tradition: the culture of Homer, the poets, and the early sages.

Neither the popular nor the scientific tradition is internally simple or uniform, and the radical difference between the two is much clearer to us than it was to Heraclitus himself.[25] But the originality of Heraclitus can be fully appreciated only in the light of this distinction. For both his historical position and his role as a sage for the centuries are most clearly seen as a bridge between these two traditions.

The underlying assumption common to both traditions (and to all Greek thought) is a basic antithesis between gods and men, between the divine and the human, and an interpretation of the human condition in the light of this contrast. Human nature for the Greeks is thus essentially characterized by mortality and fallibility: by the brevity of human life and by the weakness of our intellectual vision. (Heraclitus is expressing this basic assumption when he says 'human nature has no insights, but the divine has them', LV, D. 78.) Where

the two traditions diverge most sharply is in their conception of what is divine. For the poets of the popular tradition the gods have human form, even though they are vastly superior in strength, clairvoyance, ability of all sorts, and in their total freedom from the shadow of death. The clearest symptom (though not the original source) of the new world view is a radical break with this anthropomorphism. When Xenophanes complained that 'Homer and Hesiod ascribed to the gods everything that is a shame and reproach among men' (fr. 11), he is not departing in principle from the popular view. For it was part of this tradition that 'bards tell many a lie', and that every poet has the right to correct his predecessors by rejecting or reshaping a familiar story.[26] The new tendency to require that tales about the gods conform with human moral standards can be seen as completing rather than denying the traditional conception of the gods as superior, but generally similar, to human beings. And the origins of this moralizing tendency in Greek theology can be traced back at least as far as the *Odyssey*, which opens with a scene in which Zeus complains that mortals always blame the gods for disaster when they are themselves at fault. The whole structure of the *Odyssey* implies the thesis upon which Hesiod insists with such vehemence: that the actions of Zeus will respect and enforce recognizable principles of justice.[27]

But it is something else again when Xenophanes attacks the views of mortals who 'imagine that the gods are born, and that they have the same clothes and voice and body as men do' (fr. 14; cf. frs. 15–16), and when he announces instead that there is 'one god, greatest among gods and men, similar to mortals neither in body nor in thought' (fr. 23), who remains forever stationary in one place but 'agitates all things with the effortless thought of his mind' (frs. 25–6). What we encounter here, for the first time in surviving literature, is a total rejection of the basis upon which the traditional theology rests. For within this tradition divine genealogies and family connections, as well as direct personal intervention in the affairs of mankind, were fundamental features of the popular and poetic conception of the gods.

This new conception of divinity as birthless and not merely deathless, as radically different from men in every respect, is essentially the conception of a *cosmic god*: a deity conceived not as the supreme patriarch of a quasi-human family but as the ruling principle of an orderly universe. And such a view presupposes the work of the scientists or natural philosophers whom Aristotle called the *physikoi*,

students of the nature of things (*physis*). More specifically, the theology of Xenophanes presupposes the cosmology of the first *physikoi*, the Milesians of the sixth century.[28]

(a) The popular tradition

Before turning to the new tradition I want to summarize the moral conceptions of the popular view, as presented in the early poets. The discussion will be limited to the notion of *aretē* or human excellence, generally translated 'virtue', and to some discrepancies between different notions of excellence attested in the early literature.

The Homeric conception of *aretē* is strikingly expressed in a few familiar verses. *Aien aristeuein kai hypeirochon emmenai allōn* is the advice which a heroic father gives to his son (*Iliad* VI.208), as Peleus to Achilles (XI.784): 'Always be first and best, and ahead of everyone else.' This unabashed striving for individual pre-eminence, in the spirit of an athletic competition or a contemporary race for the American presidency, is specified for the Homeric hero by two ranges of activity in which he may achieve distinction: 'to be a speaker of words and a doer of deeds' (*Iliad* IX.443). The deeds are those of military and athletic prowess; the words are those of wise counsel and planning. This ancient duality of speech and action remains as a permanent paradigm for the classification of achievements: it is echoed in Heraclitus' opening reference to the 'words and works (*erga*) which I set forth' (in fragment I), as in the later Sophistic antithesis between 'in word' (*logos*) and 'in deed' (*ergon*). It is natural to take the heroes of the two Homeric epics as supreme examples of success in these two fields: Achilles as the greatest warrior at Troy, and Odysseus as the wiliest and most sagacious of mortal men. For a good 'speaker of words' is of course a man of discretion and foresight: language stands here for intelligence. We may speak of a contrast between the active and the calculating or the military and the intellectual virtues, as long as we realize that the intelligence which is prized is the practical use of words and wits to guide successful action.

Thus we find in the early heroic code, whose grip on classical and even on modern Greece is extraordinarily persistent, no recognition of intellectual or moral excellence that might be distinct in principle from the successful pursuit of whatever goals one has in view. With some oversimplification, we can say that according to the heroic code an action is judged wrong, shameful or foolish only if and because it will lead to failure or disaster for the agent himself.

This statement is oversimplified in two respects. In the first place,

sensitive to the fundamental requirement, for a minimally decent life, of a human community upon whose legal and moral structure all the citizens can rely.

(b) The tradition of natural philosophy

This synthesis between the selfish and social ideals of the Greek tradition was made possible by a deeper sense of unity articulated in Heraclitus' interpretation of the Milesian cosmology. Despite a wide range of mythic and poetic antecedents, the Ionian conception of the world as a *kosmos* was something new, and its novelty is identical with the emergence of western science and philosophy as such. What we find in sixth-century Miletus is a scientific revolution in Kuhn's sense, the creation of a new paradigm of theoretical explanation, with the peculiar distinction that this world view is the first one to be recognizably scientific, so that the innovation in this case is not so much a revolution *within* science as a revolution *into* science for the first time. The Milesian cosmologies are scientific, in the sense in which for example the world picture of Hesiod is not, because the new view of the *kosmos* is connected both with a geometric model and with empirical observation in such a way that the model can be progressively refined and corrected to provide a better explanation for a wider range of empirical data.

Astronomical observation, like numerical calculation, had long been practiced with great skill in the East; and for several centuries after Thales and Anaximander the Greeks remained the pupils of the Babylonians in this respect. But Anaximander provided what it seems that no Babylonian and no Greek had ever conceived before him: a simple geometrical model by which to comprehend the observed movements of the heavenly bodies. In its general outlines, with the earth situated in the middle of a system of concentric circles, the Milesian scheme remained the standard one in scientific astronomy down to Copernicus. But in all its details it was subject to systematic and in some cases very rapid improvement. The conception of the fixed stars as revolving in a stellar sphere, if it does not go back to Anaximander or Anaximenes, must have been articulated soon afterwards. The shape of the earth, a flat disk for Anaximander, was soon recognized as spherical. The explanation of solar and lunar eclipse, which Anaximander seems to have provided for by an *ad hoc* hypothesis of fire-holes opening and closing, begins to take on a more accurate optical and geometric form by the time of Parmenides. The true explanation, according to essentially correct principles of celestial

geometry, was given by Anaxagoras within a century after Anaximander's initial formulation of the model. The Greeks learned how to compute eclipses from the Babylonians; but they were the first to *explain* them. And the very possibility of such an explanation was created by the idea of a clear geometric model for the heavens.

It is this celestial geometry that constitutes the radically new and revolutionary aspect of the Milesian cosmology, considered as a contribution to science in the strict sense. And it is revealing for Heraclitus' relationship to the new science that it is precisely this aspect of Milesian cosmology that interested him least. What little we know about his pronouncements on astronomical matters suggests an almost deliberate preference for more primitive conceptions: for the view that the sun is the size of a human foot, that it is extinguished every night and relit every morning.[37] What fascinated him in the new world view was not its geometrical clarity and the possibilities this offered for the development of exact science, but something else, something more directly continuous with older, pre-scientific concerns.

The early natural philosophers were not mere theoreticians; they were practical astronomers, interested in forecasting seasonal changes of weather, measuring the agricultural seasons, and establishing a reliable calendar.[38] The Babylonians had used the *gnōmōn* or sundial for this purpose, and the Greek tradition has it that the Ionians (more specifically Anaximander according to some reports) had taken over the instrument from them and began to make accurate measurements of the astronomical seasons, as marked by solstice and equinox.[39] The result was a progressively more accurate scientific calendar, based upon a convergence of lunar and solar cycles estimated first at 8 and then at 19 years. The cycles themselves were probably discovered in Mesopotamia. But their use in Greece (where the highly accurate 'Metonic' cycle of 19 years was known about 450 B.C.) testifies to an increasingly sophisticated tradition of observational astronomy.

The astronomical study of daily, monthly, and annual cycles is connected not only with agricultural applications but also with the seafaring enterprises in which Miletus excelled: thus Thales was credited with one of the earliest handbooks (in verse) of *Nautical Astronomy*.[40] Both agricultural and navigational concerns require continuous attention to the atmospheric phenomena of evaporation and precipitation involved in drought and rain, clouds and wind. It is characteristic of Ionian cosmology to connect these with other, less immediately obvious phenomena of earth, sea, and sky – such as the

silting process that has gradually transformed the ancient harbors of Ephesus and Miletus into marshy plains 3 and 5 miles from the sea, or the up-and-down changes in the level of the coastline that are found throughout the Aegean area, as well as in southern Italy – and to interpret them all in terms of a conflict between opposing powers: the wet and the dry, the hot and the cold, the bright and the dark. The natural philosophers construed this conflict as a cycle of elemental interchange, within which each of the opposing powers dominates in turn, as the hot and dry does in summer, the cold and wet in winter. It was such a cycle that Anaximander described in the one surviving quotation from his book:

> Out of those things [namely, the opposing powers] from which their generation comes, into these again does the destruction of things take place, in accordance with what is right and necessary; for they make amends and pay the penalty to one another for their aggression (*adikia*, injustice) according to the ordinance of Time. (DK 12.B1)

Here the pattern of physical change and transformation, the birth of what is new and the death of what is old, is seen as a conflict regulated by an 'ordinance of time', where the contestants appear in turn as victor and vanquished. And this ordering is itself described in the language of justice, where the wrongdoer must pay the penalty for his aggression or excess. This Milesian notion of cosmic order as one of opposition, reciprocity, and inevitable justice, is faithfully taken over by Heraclitus, with all its poetic resonance and association with older, mythical ideas: 'War is shared [for the killer will be killed in his turn], and [hence] Conflict is Justice.' (See LXXXII, D. 80, with commentary.)

I have so far characterized the new Ionian cosmology by three fundamental features: (1) a geometric model for the heavens, (2) observation and numerical measurement of astral cycles, and (3) the interpretation of physical change as a conflict of elemental powers within a periodic order of reciprocity and symmetry recognized as just. To these must be added a fourth, less original feature: the tendency to explain the present state of affairs by deriving it from some initial situation or first beginning. In place of Hesiod's theogony, the natural philosophers give us cosmogony. The reports on Anaximander and the quotations from Anaxagoras show that Ionian cosmology began, like Hesiod and the book of Genesis, 'in the beginning'. It described the emergence of the world order as a gradual process of generation or development from an *archē*, a starting point or 'what

came first of all' (*Theogony* 115). And there is some evidence to suggest that Anaximander, like Empedocles and the atomists later, applied the principle of symmetry to foresee a reversal of the cosmic process, so that the earth which had emerged from the sea would sink into it again, and perhaps the whole world process might begin anew.[41]

These four principles characterize the original Greek conception of the natural world as a *kosmos*, an orderly arrangement whose structure can be rationally understood. For the early cosmologists, as later for Plato, Aristotle and the Stoics, this conception entailed a fifth principle to which I have alluded: the idea of the cosmos brought with it the idea of the cosmic god.[42] Although this new theological view, with its radical departure from the traditional notion of the gods, is first clearly attested in the surviving fragments of Xenophanes, it seems likely that here too Anaximander was the precursor. For we are told that he described his primary cosmic principle, the *apeiron* or Boundless, as eternal and unaging, which is to say divine. And he said of this divine principle that it 'circumscribes all things and steers them all' (DK 12.A 15).

Now if Heraclitus shows little interest in the geometric model for the heavens or the scientific explanation of nature in detail, his thought is nevertheless penetrated by the new conception of the cosmos. Although not himself a *physikos* or natural philosopher proper, his own system can only be understood as a response to the world view of the Milesian physicists. This will appear most clearly if we compare his doctrine of Fire with the latest Milesian cosmology, that of Anaximenes.

In place of the indeterminate Boundless of Anaximander, Anaximenes proposed the more definite physical form of *aër* as starting point for the cosmic process. Before the word come to denote atmospheric air, *aër* had meant 'mist' or 'vapor'; and Anaximenes must have chosen this principle because of its close association with the atmospheric cycle of evaporation and condensation. He appears to have taken that cycle as the paradigm for understanding physical change in general and explaining the origin of the world order: all things are derived from *aër* by being condensed through cooling or by being rarefied through heating.[43] This doctrine of Anaximenes, restated in later conceptual terms by Diogenes of Apollonia in the next century, was taken by Aristotle as the pattern for the material monism which he ascribes to most of the early *physikoi*. Thus Thales is said to have derived all things from water, as Anaximenes and Diogenes derived everything from air. And Heraclitus is named

together with a certain Hippasus of Metapontum as having chosen fire as the starting point (*Met.* A 3, 983b–984a). This interpretation of Heraclitus' doctrine by analogy with that of Anaximenes is more fully stated in the Theophrastean doxography in Simplicius:

> They [sc. Hippasus and Heraclitus] produce all things from fire by thickening and rarefaction and they dissolve them back into fire, maintaining that this is the underlying nature or substrate of things. For Heraclitus says all things are an exchange (*amoibē*) for fire. (DK 22.A 5)

The last sentence of this report is a paraphrase of XL (D. 90): 'All things are requital (*antamoibē*) for fire, and fire for all things, as goods for gold and gold for goods.' Thus Theophrastus, following the example of Aristotle, understood Heraclitus' doctrine of fire as the statement of a physical theory along the lines of Anaximenes and Diogenes of Apollonia, but differing from them by the substitution of fire for air. And in doing so, Theophrastus was both right and wrong. For the assertion that all things are exchanged for fire must have been intended as an *allusion* to Anaximenes' doctrine; just as statements like 'for water it is death to become earth, but out of earth water arises' (CII, D. 36), or the listing of sea, earth and lightning storm as 'reversals' of fire (XXXVIII, D. 31A) and the statement that 'sea pours out, and it measures up to the same amount it was before becoming earth' (XXXIX, D. 31B) can only be understood by reference to Ionian theories of elemental transformation.[44] Such texts provided a *prima facie* case for grouping Heraclitus together with the natural philosophers. Theophrastus' mistake (continued in the tradition, both ancient and modern, that treats Heraclitus' doctrine of fire as a physical theory of the same sort as Anaximenes') lies in ignoring the poetic and paradoxical nature of these statements concerning elemental change, and thus treating the mode of expression as irrelevant to the meaning. To make such a mistake is to disregard the hint that Heraclitus himself had given in speaking of the oracle which 'neither declares nor conceals but gives a sign' (XXXIII, D. 93). The sign, in Heraclitus' case, is the very form of his discourse, the nature of the *logos* which he has composed as an expression of his own view of wisdom, in contrast to that piling up of erudition which he despises as *polymathiē*, 'the learning of many things', in the work of his predecessors. It is precisely in the use of such words as *antamoibē* 'requital' and *tropai* 'turnings', 'reversals', as in the description of elemental change as a cycle of 'birth' and 'death' with the soul (*psychē*) placed both at the beginning and at the end of the cycle

(CII, D. 36), that Heraclitus gives the sign of his own deeper meaning. These signs, and the riddling nature of his whole discourse, were systematically ignored by Theophrastus and the doxographers who followed him. Theophrastus could only regard the paradoxical style of the work as the symptom of some mental derangement, some *melancholia*, which caused Heraclitus to express himself 'sometimes incompletely and sometimes in inconsistent fashion'.[45]

We come closer to a correct reading of the signs with a Hellenistic critic named Diodotus, who declared that the book was not about the nature of things (*peri physeōs*) after all but about man's life in society (*peri politeias*), and that the physical doctrines serve only as illustration.[46] This is an overstatement, but it points in the right direction. Diels came still closer to the mark when he observed that Heraclitus was interested only in the most general conceptions of Ionian physics, and that his real starting point was 'I went in search of myself.' Once he had encountered the law of the microcosm within himself, 'he discovered it for a second time in the external world'.[47]

I believe that Diels was right in locating the central insight of Heraclitus in this identity of structure between the inner, personal world of the psyche and the larger natural order of the universe. The doctrines of fire, cosmic order, and elemental transformations serve as more than illustrations; but they are significant only insofar as they reveal a general truth about the unity of opposites, a truth whose primary application for human beings lies in a deeper understanding of their own experience of life and death, sleeping and waking, youth and old age. If I have chosen as epigraph for this book two quotations from Spinoza and Unamuno, that is not because they assert doctrines with which Heraclitus would have agreed but because they locate more precisely the focal point of his own philosophical reflection: a meditation on human life and human destiny in the context of biological death. In Heraclitus' view such an understanding of the human condition is inseparable from an insight into the unifying structure of the universe, the total unity within which all opposing principles – including mortality and immortality – are reconciled. It is this insight and this understanding which Heraclitus prizes as wisdom (*sophia*) and which his whole discourse struggles to express. The war of opposites, the cosmic fire, the divine one which is also wisdom itself or 'the wise one' – all these provide the framework within which human life and death are to be understood, and to be understood means to be seen in their unity, like day and night (XIX, D. 57). The ignorance of men lies in their failure to comprehend the

logos in which this insight is articulated, the *logos* which is at once the discourse of Heraclitus, the nature of language itself, the structure of the psyche and the universal principle in accordance with which all things come to pass. Heraclitus' grasp of this insight would have been impossible without the new, philosophic conception of cosmic order; and this sets him apart from the older Wise Men. But he belongs with them in the concern for wisdom as an insight into the pattern of human life and the limits of the human condition. What they did not see – and could not see before the birth of natural philosophy – is that the pattern of human life and the pattern of cosmic order is one and the same.

A fuller defense of this interpretation will be the task of the commentary. I conclude these introductory remarks by a glance at the most striking of the 'physical' fragments, in which Heraclitus is clearly responding to and transforming the doctrines of the natural philosophers.

> The ordering (*kosmos*), the same for all, no god or man has made, but it ever was and is and will be: fire everliving, kindled in measures and in measures going out. (XXXVII, D. 30)

Modern interpreters who look for a physical theory in Heraclitus have seen here a denial that the world order was generated as a result of any cosmogonic process such as the other natural philosophers had assumed. But the emphasis of the wording and imagery suggests something quite different.

The Milesians were concerned to show how the order of the world had come into being, how it was maintained, and (very probably) how it would eventually perish, only to be produced anew out of its eternal and inexhaustible source. Anaximander had conceived this order as governed from without, by the primordial Boundless; Xenophanes had replaced the Boundless with an intelligent deity who moves all things by thought. Heraclitus accepts the Milesian view of a world order in which the opposition and transformation of elementary powers is governed by measure and proportion. But he denies that this order is imposed upon the world by any power from without. Instead, he deifies one of its internal constituents. For to say that fire is 'everliving', that it 'ever was and is and will be' is to say, simply, that it is eternal and divine. Yet Heraclitus insists upon the fact that this god participates in the changing life of nature, 'kindled in measures and in measures going out'. There is a genuine parallel here to Anaximenes' conception of the primordial Air. But Anaximenes would scarcely have emphasized the extinction of his principle

at the very moment that he asserts its eternity; nor would he have identified his elemental principle with the cosmos as such. What is striking about Heraclitus' statement is that it confronts us with the double paradox of a world order identified with one of its constituent parts, and an eternal principle embodied in the most transitory of visual phenomena.

The resolution of these antinomies, concerning what is 'whole and not whole' (CXXIV, D. 10), what is both mortal and everliving, must await the fuller commentary. The point of importance here is that the choice of fire as a substitute for air can scarcely have been motivated by the desire for a more adequate physical theory: nothing is literally derived from fire in the way that winds, clouds, and water may be derived from air. Heraclitus' aim is not to improve the Milesian cosmology by altering a particular doctrine but to reinterpret its total meaning by a radical shift in perspective. The advantage of fire for the new point of view is that it signifies both a power of destruction and death – as in a burning city or a funeral pyre – and also a principle of superhuman vitality; a temporary phenomenon that dies out or is quenched and an eternal principle that is everywhere one and the same, whether in the altar flame, the domestic hearth, the forest fire lit by lightning, or the blazing torches of war. By meditating on the fire one who knows how to read oracular signs can perceive the hidden harmony that unifies opposing principles not only within the cosmic order but also in the destiny of the human psyche.

From Pythagoras of Samos, his neighbor and near contemporary, Heraclitus had learned a new conception of the destiny of the psyche, and perhaps also a new sense for the power of number, proportion, and measure in the rational organization of the world. But Pythagoras, like Xenophanes, provokes his particular scorn, for these two have tried to expand the philosophy of nature into a general vision of god and man and have, in his view, conspicuously failed.

It is precisely this task which Heraclitus undertakes. His real subject is not the physical world but the human condition, the condition of mortality. But by its participation in the eternal life cycle of nature and also by its capacity to master this pattern in cognition, the structure of the psyche is unlimited (XXXV, D. 45). Mortals are immortal, immortals mortal (XCII, D. 62). The opposites are one; and this deathless structure of life-and-death is deity itself.

XXXIV

XXXIV (D. 92, M. 75) Plutarch, *De Pythiae Oraculis* 397A

[[Σίβυλλα δὲ μαινομένῳ στόματι καθ' Ἡράκλειτον ἀγέλαστα καὶ ἀκαλλώπιστα καὶ ἀμύριστα φθεγγομένη χιλίων ἐτῶν ἐξικνεῖται τῇ φωνῇ διὰ τὸν θεόν.]]

XXXV

XXXV (D. 45, M. 67) Diogenes Laertius IX.7

ψυχῆς πείρατα ἰὼν οὐκ ἂν ἐξεύροιο πᾶσαν ἐπιπορευόμενος ὁδόν· οὕτω βαθὺν λόγον ἔχει.

XXXVI

XXXVI (D. 50, M. 26) Hippolytus, *Refutatio* IX.9.1

οὐκ ἐμοῦ ἀλλὰ τοῦ λόγου ἀκούσαντας ὁμολογεῖν σοφόν ἐστιν ἓν πάντα εἶναι.

XXXVII

XXXVII (D. 30, M. 51) Clement, *Stromateis* V.103.6

κόσμον τὸν αὐτὸν ἁπάντων οὔτε τις θεῶν οὔτε ἀνθρώπων ἐποίησεν, ἀλλ' ἦν ἀεὶ καὶ ἔστιν καὶ ἔσται πῦρ ἀείζωον, ἁπτόμενον μέτρα καὶ ἀποσβεννύμενον μέτρα.

XXXVI With some misgiving I accept the usual correction εἶναι for εἰδέναι in the MSS.
XXXVII I give the text of Clement. Since Bywater most editors have added τόνδε after κόσμον from an inferior variant found in Simplicius and Plutarch (who do not have τὸν αὐτὸν ἁπάντων).

XXXIV

[[The Sibyl with raving mouth utters things mirthless and unadorned and unperfumed, and her voice carries through a thousand years because of the god who speaks through her.]]

XXXV

You will not find out the limits of the soul by going, even if you travel over every way, so deep is its report.

XXXVI

It is wise, listening not to me but to the report, to agree that all things are one.

XXXVII

The ordering, the same for all, no god nor man has made, but it ever was and is and will be: fire everliving, kindled in measures and in measures going out.

XXXIV From Plutarch: 'The Sibyl with raving mouth, as Heraclitus says . . . '.
Sibyl, legendary woman who prophesied in trance, possessed by Apollo.

XXXV **soul:** *psychē*, life-breath, life; ghost, phantom; spirit, soul.
report: *logos*: see on I: perhaps 'so deep is its measure'.

XXXVI **wise:** *sophon*: see on XXVII.
report: *logos*: see on I.
agree: *homologein*, say the same thing as, agree with, playing here on *logos*: 'to speak in agreement with the report that says . . . '.

XXXVII **ordering:** *kosmos*, military array, good order; adornment; world order.
for all: *hapantōn*, either 'all men' or 'all things', as in XXVII, etc. Alternate version of the text: 'This ordering no god nor man has made . . . '

XXXVIII

XXXVIII (D. 31A, M. 53A) Clement, *Stromateis* V.104.3

πυρὸς τροπαὶ πρῶτον θάλασσα, θαλάσσης δὲ τὸ μὲν ἥμισυ γῆ, τὸ δὲ ἥμισυ πρηστήρ.

XXXIX

XXXIX (D. 31B, M. 53B) Clement, *Stromateis* V.104.5

θάλασσα διαχέεται καὶ μετρέεται εἰς τὸν αὐτὸν λόγον ὁκοῖος πρόσθεν ἦν ἢ γενέσθαι γῆ.

XL

XL (D. 90, M. 54) Plutarch, *De E apud Delphous* 388D–E

πυρὸς ἀνταμοιβὴ τὰ πάντα καὶ πῦρ ἀπάντων ὅκωσπερ χρυσοῦ χρήματα καὶ χρημάτων χρυσός.

XLI

XLI (D. 76, M. 66e[1]) Plutarch, *De E apud Delphous* 392C

[[ὡς Ἡράκλειτος ἔλεγε, πυρὸς θάνατος ἀέρι γένεσις, καὶ ἀέρος θάνατος ὕδατι γένεσις.]]

XXXIX Here again I give the text of Clement, as corrected from Eusebius. Many editors introduce <γῆ> as subject of the first clause.
XL The MS reading in Plutarch ἀνταμείβεται πάντα, retained by Bywater and revived by Bollack-Wismann, may be correct: but it offers no appreciable difference in sense.

XXXVIII

The reversals of fire: first sea; but of sea half is earth, half lightning storm.

XXXIX

Sea pours out <from earth>, and it measures up to the same amount it was before becoming earth.

XL

All things are requital for fire, and fire for all things, as goods for gold and gold for goods.

XLI

[[The death of fire is birth for air, and the death of air is birth for water.]]

XXXVIII **reversals:** *tropē*, reversal, flight in battle, rout; turning around, turning point, esp. of the sun = solstice.
lightning storm: *prēstēr*, literally 'burner', a violent storm with destructive lightning.

XXXIX May be continuous with preceding fragment.
pours out: *diacheetai*, is spread apart, dissolves.
amount: *logos*: see on I; cf. the sense 'measure' in XXXV. Alternate version of the text: 'Earth dissolves as sea, and it measures up to the same *logos* as was there at first.'

XL **requital:** *antamoibē*, exchange; payment; punishment.

XLI From Plutarch: 'As Heraclitus said . . . '

XLIX

XLIX (D. 126, M. 42) Tzetzes, *Scholia ad Exegesin in Iliadem* p. 126

τὰ ψυχρὰ θέρεται, θερμὸν ψύχεται, ὑγρὸν αὐαίνεται, καρφαλέον νοτίζεται.

L

L (D. 12, M. 40a) Arius Didymus fr. 39.2, ed. Diels, *Doxographi Graeci* p. 471, 4

ποταμοῖσι τοῖσιν αὐτοῖσιν ἐμβαίνουσιν ἕτερα καὶ ἕτερα ὕδατα ἐπιρρεῖ.

LI

LI (D. 91, M. 40c[3]) Plutarch, *De E apud Delphous* 392B

[[*ποταμῷ γὰρ οὐκ ἔστιν ἐμβῆναι δὶς τῷ αὐτῷ καθ' Ἡράκλειτον· οὐδὲ θνητῆς οὐσίας δὶς ἅψασθαι κατὰ ἕξιν, ἀλλ' ὀξύτητι καὶ τάχει μεταβολῆς σκίδνησι καὶ πάλιν συνάγει, μᾶλλον δὲ οὐδὲ πάλιν οὐδ' ὕστερον ἀλλ ἅμα συνίσταται καὶ ἀπολείπει, καὶ πρόσεισι καὶ ἄπεισιν.*]]

LII

LII (D. 84a, M. 56A) Plotinus IV.8.1 (text below)

LIII

LIII (D. 84b, M. 56B) Plotinus (reference above)

[[*ὁ μὲν γὰρ Ἡράκλειτος . . . εἰπών . . . μεταβάλλον ἀναπαύεται καὶ κάματός ἐστι τοῖς αὐτοῖς μοχθεῖν καὶ ἄρχεσθαι, εἰκάζειν ἔδωκεν.*]]

XLIX

Cold warms up, warm cools off, moist parches, dry dampens.

L

As they step into the same rivers, other and still other waters flow upon them.

LI

[[One cannot step twice into the same river, nor can one grasp any mortal substance in a stable condition, but it scatters and again gathers; it forms and dissolves, and approaches and departs.]]

LII

[[It rests by changing.]]

LIII

[[It is weariness to toil at the same tasks and be always beginning.]]

L For the context, see note to CXIII.

LI From Plutarch: 'According to Heraclitus . . . '

LII From Plotinus: 'Heraclitus left us to guess what he means when he said . . . '

LIII From Plotinus (continuing LII): 'and when he said . . . '. Alternate rendering: 'It is a weariness to labor for the same masters and be ruled by them' (Burnet).

thesis. What he could draw from them was the double claim (i) that all things are derived from a single *archē* or starting point, and (ii) that as now constituted all things are organized within a single world structure or *kosmos*. And we may add (iii) that Anaximander surely, and Anaximenes probably, thought of the initial principle not only as encompassing (*periechein*), and thus physically unifying the world, but also as 'steering' and governing it by imposing a rational structure. Aspects (i) and (ii) of Milesian monism seem to be reflected in XXXVII (D. 30); the aspect of cosmic guidance (iii) will emerge in LIV (D. 41).

XXXVII

XXXVII (D. 30) The ordering (*kosmos*), the same for all, no god nor man has made, but it ever was and is and will be: fire everliving, kindled in measures and in measures going out.

This text, with the two that follow (D. 31A and 31B), gives us our primary information on Heraclitus' cosmological thought and the most natural interpretation of his claim that all things are one. But all three texts are surrounded by thorny problems. What is the relationship between Heraclitus' doctrine and the cosmological theories of his Milesian predecessors? In what sense can a world order be identified with 'everliving fire'? And is Heraclitus here denying the general assumption of a development of the world from some more primitive source?

I have already indicated my answers to these questions in the Introduction. Since my position diverges from the dominant trends in recent scholarship, it will be necessary to support it in some detail. But before entering the precinct of controversy, I want to sketch a preliminary reading of XXXVII that does not raise any of these questions, since it does not presuppose any connection with the doctrines of the Milesians and their successors but takes the term *kosmos* in the context of its early literary usage, without reference to the new, technical sense of 'world' or 'world order'.[119] In the fragments as arranged here, we have had no reference to physical theory (though there is some hint of this in the repeated occurrence of the term *physis*), no mention of the Milesian cosmologists as such (since Thales was apparently paired with Homer, as Pythagoras, Xenophanes and Hecataeus are named with Hesiod), and no reference to cosmology. (The only occurrence so far of the term *kosmos* is in the dubious 'fragment' VI, D. 89.) A reader encountering XXXVII for the first

time might well begin by taking *kosmos* in its normal literary sense of 'good order', 'adornment', as in the brilliant *toilette* of a woman of fashion or in the impressive array of disciplined troops.[120]

A '*kosmos*, the same for all' may then be understood either as (1) a moral or political order, applicable to all men, like the 'divine one' by which all human laws are nourished in XXX (D. 114); or (2) an ornament like jewelry, fine clothing, or a work of art. In the long run this naive reading of XXXVII cannot succeed. But the older, literary sense of *kosmos* is a natural starting point, since Heraclitus does not write in a technical language and the new 'cosmological' sense of *kosmos* is itself the heir to all these older nuances of the word. The technical notion of 'world order' will emerge only as a *hyponoia* brought to the surface by reflection, once it is seen that no good sense can be made of the idea of 'an adornment the same for all'; and if 'a social order the same for all (men)' does make sense, it is not easy to understand how such an order could be identified with eternal fire. It is the formula for eternity ('ever was and is and will be') and the mention of fire that will force us onto the terrain of natural philosophy.[121]

Before this move to the technical sense of *kosmos* is required, we are told that 'no god nor man has made the *kosmos*, the same for all'. Scholars have scratched their heads over this denial that any human being has made the *kosmos* (why should anybody suppose *that*?) and have generally dismissed these words as a so-called polar expression, as if 'neither man nor god' meant simply 'no one at all'. But even the notion that a *god* has made the world is poorly attested in Greece before Plato's *Timaeus*. The whole problem here is an artificial one, created by the mistaken assumption (in turn supported by the mistaken reading *tonde*) that *kosmos* must from the beginning have its technical sense of 'world order'. For of course if *kosmos* means 'moral (or social) order', or if it means 'ornament', then we naturally suppose it to be the work of an orderer, whether human or divine. Thus the sons of Atreus are regularly referred to in the *Iliad* as 'orderers of the host' (*kosmētore laōn*). On our first, naive reading of XXXVII we see very clearly what Heraclitus is denying, though we cannot immediately understand why. We are faced with two paradoxes: an array that is not local or particular but 'the same for all'; and an instance of order without an orderer, like a disciplined host without a commander, a law without a lawgiver, or a work of art without an artisan. The first paradox is resolved by a shift to the philosophical sense of *kosmos*. The world order is naturally 'common',

the same for all men and for all things: that is just what is meant by a world order. But how can we have an ordered world without a power to set it in order?

By denying that this order is a work of art, Heraclitus implies that it is a work of nature: self-made or self-grown. Thus the cosmological idea begins to emerge, and becomes explicit when the *kosmos* itself is invested with the attributes of divinity: 'it ever was and is and will be'. This is the thought echoed in a famous fragment of Euripides: the student of Ionian science (*historia*) beholds 'the ageless order (*kosmos*) of undying nature (*physis*)' (fr. 910 Nauck = DK 59.A 30). The new philosophical paradox of XXXVII is a denial of any fundamental duality between a generated world order and the eternal source from which it arises or the ruling intelligence by which it is organized. Insofar as the *kosmos* is made, it is self-made; insofar as it is organized, it is self-organized; insofar as it is generated, it is identical with its own eternal source, everliving fire.

XXXVII is built up by wave upon wave of paradox. If the initial problems are resolved by taking *kosmos* in the sense of 'world order' and by the identification of this order with fire, that identification is itself paradoxical, whether we think of fire as an element within the world – for in that case the whole is identified with one of its parts – or whether we think of it as some primordial or transcendent power, as the emphasis on its eternal being would suggest. (For then the world is identified with something transmundane!) But the culminating paradox is provided by the last two participles, when this principle of cosmic eternity is said to be regularly *rekindled* and regularly *going out*. What sense can we make of an eternal bonfire going out? And what are the measures according to which it is kindled and extinguished?

So far I have avoided the shoals of controversy, but that is no longer possible. For the question of the measures of fire going out is just the question of whether or not Heraclitus envisaged the world as gradually taking shape from (and eventually reabsorbed into) primordial fire, as the Stoics did after him and in his name. And this double question – the issues of cosmogony and cosmic conflagration, which hang together – stands at the storm center of scholarly dispute. If the Stoics were not actually following Heraclitus, they were certainly following the view indicated by Aristotle and presented in detail by Theophrastus: 'The *kosmos* is generated from fire and is ignited again according to certain periods alternating through all eternity' (D.L. IX.8 = DK 22.A1; see Appendix IIA). Theophrastus' account was

accepted in antiquity by all later writers, and by Zeller, Diels, and most modern scholars (though not by Burnet) until the publication of Reinhardt's book on Parmenides in 1916. Since then the tide has turned, and I find myself almost alone today in suggesting that, after all, Theophrastus and the Stoics understood Heraclitus correctly on this point. Although a strong basis was laid by Burnet's presentation of the case, the great success of Reinhardt's argument is due to a new and important insight: not only do the extant fragments not present any detailed statement of cosmogony, but there is good reason to doubt that any lost fragments were more explicit. The doxography of Theophrastus, and the Stoic interpretation that is built upon it, show every sign of relying precisely upon those fragments whose original text has been preserved. So the ancient interpretation has no independent authority.[122] On this point modern scholarship is unanimous. Whatever interpretation we offer must be based upon Heraclitus' words alone, together with whatever we can know of their historical context.

Once this point has been admitted, I believe that the recent denial of cosmogony for Heraclitus will turn out to be a temporary overreaction, an exaggerated by-product of our emancipation from the authority of the Stoic and doxographical interpretations. If we read Heraclitus' words with an ear for their rich allusiveness, we will find that they do not contain a dogmatic denial of cosmogony any more than they contain a full statement of that process. On the contrary, we will find that XXXVII and a dozen other texts are best understood as *presupposing* rather than as denying a genetic account of the order of nature, and as playing fruitfully with the notion that the world will one day go up in smoke. On this point – the primary or pre-eminent sense of 'kindled in measures and in measures going out' – the Stoics did not misunderstand Heraclitus; they distorted his cosmic speculation only by transforming a subtle, poetic vision of the cosmic process into a rigid orthodoxy.

This argument will be pursued in the next sections of the commentary. But I do not share the common view that the question of cosmogony and ecpyrosis is decisive for the understanding of Heraclitus. If we eliminate this cycle of world formation and destruction from his system, the vision of nature will be lacking in completeness and in symmetry, but it will still be essentially the same vision. For the pattern of natural law is the same for macrocosm and for microcosm, for the origins of heaven and earth and their present pattern of transformation: 'kindled in measures and in measures going

out' applies to all of these. The great cosmic cycle is only the ordinary cycle of natural change and human life writ large. What is crucial is not the debate about a particular doctrine but the recognition of the *kind of discourse* which Heraclitus presents, and which separates him from the natural philosophers like Anaxagoras and Diogenes. This is what Theophrastus and (to a lesser extent) the Stoics failed to understand, and what Heraclitus himself realized was so difficult to express. Once we understand his ironical self-distancing from technical cosmology, and his reinterpretation of all other conceptions in terms of an understanding of human life and death, his lofty acceptance-but-also-denial of a cosmic cycle will appear as a natural consequence of his general attitude to Ionian physics.

Before returning to the exegesis of XXXVII, I want to repeat one very general argument against the currently predominant view, which holds that by saying the *kosmos* 'forever was and is and will be, everliving fire' Heraclitus meant literally and unambiguously to deny that the world had emerged from some earlier and simpler state of affairs.[123] It seems that little thought has been given to how strange, almost unintelligible, would be the dogmatic rejection of cosmogenesis by an archaic thinker. The instinct to explain things by telling how they began and how they developed is not only at the basis of all mythic thought; it also dominates all scientific or philosophic speculation down to and including Plato's *Timaeus*. 'The principle of cosmogony was rejected by no one before Aristotle, not even by Parmenides, and it has perhaps been rejected by no one since, except under Aristotelian influence. The scientists who write on "the birth of the solar system" are only giving us the latest version of the creation story.'[124] Aristotle alone broke with this millenial tradition, and he had a strong motive for doing so. He had abandoned Plato's realm of imperishable Forms but not Plato's belief that scientific knowledge requires a fixed and unchanging object. Hence it was of the greatest importance for him to find an equivalent pattern of eternal stability within the structure of the natural world. What is lacking in the case of Heraclitus is any comparable philosophical motive for espousing such a rare and radical heresy, more than a century before Plato's *Timaeus*.

To return to the identification of *kosmos* and fire: what does this mean, and why has Heraclitus chosen fire? As indicated in the Introduction, the nearly contemporary theory of Anaximenes provides the historical background against which Heraclitus' own cosmological monism is to be understood.[125] Our best account of the doc-

trine of Anaximenes comes from Theophrastus, and it seems to contain a fairly close paraphrase of Anaximenes' own words:

> He said that the first principle was limitless Air (*aēr*), from which arises what comes into being, what has become, and what will be, and gods and things divine; but other things arise from its offspring. The form of the air is as follows: when it is most uniform it is invisible [sc. as atmospheric air]; but it is made manifest by cold and heat and moisture and motion. It moves continually; for it would not change as much as it does if it were not in motion. As it thickens or rarefies it appears as different. For when it spreads out into rarer form it becomes fire; winds on the other hand are air as it thickens; from air cloud is produced by compression; and water by still more compression; when further thickened it becomes earth and in its thickest form stones. (Theophrastus in the excerpt of Hippolytus, DK 13.A 7)

The rest of the doxography, and parallels from Anaximander and from Anaxagoras (especially frs. 15 and 16), make clear that this sixth-century monism must be understood in the context of a cosmogony: if the boundless Air is taken as *archē* or starting point, that is just because Anaximenes believes he can explain how, beginning with the nature of air alone, the whole diversity of the world and its structure has evolved, by thickening and thinning in connection with cooling and heating. In this way all things arise from the Air – either directly or 'from its offspring', as the doxography reports.[126]

This genealogical derivation of the world from a single ancestor adapts a pattern that is as old as Hesiod's *Theogony* and will remain standard in the tradition of natural philosophy down to Plato's *Timaeus* (where the Demiurge is called 'father' of the created world at 37C7, but the Forms are father at 50D3, where the Receptacle is mother and the world of becoming is itself 'offspring', *engonos*). In XXXVIII and XXXIX (D. 31A–B) Heraclitus will exploit some aspects of this pattern – and again in LXXXIII (D. 53), where War is called 'father of all things'. But in XXXVII he directly rejects this pattern by insisting upon the eternal pre-existence of the world order as everliving fire.[127] This break with the Milesian scheme has the effect of identifying the world with its eternal source or *archē*, the cosmic order with its divine helmsman or regulator. This is monism with a vengeance. But why is it fire that is selected to represent the 'one'?

A recent writer on the history of science has spoken of 'the air of magic that boils out of the fire: the alchemical feeling that substances

can be changed in unpredictable ways. This is the numinous quality that seems to make fire a source of life and a living thing to carry us into a hidden underworld within the material world.'[128] Fire is indeed a mysterious symbol of life, of superhuman life – despite or because of the fact that it is the one element in which no animal can live, and a power that in ancient Greece (as in modern India) often served to receive human bodies at death. Thus in representing life and creativity it also represents death and destruction. As an altar flame consuming the sacrifice, it represents the gods. As fire for cooking and for warmth in winter it sustains human life. As instrument of the arts, the stolen gift of Prometheus, it points to the divine element in human activity, the techniques and industry that separate us from the animals. Fire has many qualities. But it is a most unlikely choice for a starting point in a literal account of the development of the world in material terms, since it is not itself a kind of matter, not a body at all, but a process of transition from one state to another, a symbol of life and death at once, the very element of paradox.

These are some of the thoughts which Heraclitus' choice of fire has imposed upon the pattern of cosmic transformation taken over from Anaximander and Anaximenes. He takes a physical theory as the background against which his words are to be understood (once we have been led to interpret *kosmos* as 'world order'); but his utterance is not itself the statement of a physical theory. Instead, the paradoxical denial that the *kosmos* has any origin or history at all is redoubled by the description of an everliving fire that is always going out. The error of recent interpreters has been to deprive this second paradox of its sting by refusing to take the words literally, reading them as a poetic reference to elemental transformations, while construing the first paradox as a literal statement of doctrine. If we take both statements at face value they indicate that the everliving fire could equally well be described as ever dying, that it is wholly transitory and always changing, while remaining eternally the same for all.

In order to unravel these puzzles, we must know more about the measures by which fire is kindled and put out. One clue is provided in the 'turnings' of fire and the measures of sea in XXXVIII–XXXIX; another will be found in the measures of the sun in XLIV (D. 94).

XXXVIII–XXXIX

XXXVIII (D. 31A) The reversals (*tropai*) of fire: first sea; but of sea half is earth, half lightning storm (*prēstēr*).

XXXIX (D. 31B) Sea pours out <from earth>, and it measures up to the same amount (*logos*) as it was before becoming earth.[129]

Clement, the only author to cite these two texts, suggests that the first follows closely on XXXVII (D. 30). His citation is compatible with there being no gap between XXXVIII and XXXIX, and many editors treat these as a single fragment. Reinhardt wished to regard all three sentences (XXXVII–XXXIX, D. 30–1) as one continuous text.[130]

If one reads XXXVIII–XXXIX without preconception, but with some knowledge of Ionian natural philosophy, they suggest a cosmogonic development of sea from fire and earth from sea: the very pattern illustrated in the doxography for Anaximenes (above, p. 137) but with Fire in the place of Air. It is just like Heraclitus, after denying that the world order has proceeded from anything else, to turn in the opposite direction and generate the world *as if* his everliving fire was an ordinary Milesian *archē*. This reflects the fact that his own cosmology both is and is not a substitute for the theories of the natural philosophers.

Given what we know about cosmogenesis in the Milesians and Anaxagoras, it takes a certain amount of hermeneutical bias, not to say obstinacy, to read 'first' and 'before' in XXXVIII–XXXIX as if the words did *not* refer to a temporal sequence. The fact that Theophrastus and all later writers, including the Stoics, took them to imply a cosmogony is not in itself a sufficient reason for us to refuse to do so.[131] If recent interpreters have resisted the temptation to recognize some kind of temporal sequence or cycle in XXXVIII–XXXIX, that is because they believed cosmogony was *excluded* by Heraclitus in XXXVII (D. 30). Once we have decided to accept Heraclitus' words in all their diverse, even contradictory suggestiveness, there is no reason to doubt that the two sentences on fire, sea, and earth are intended to *suggest* some process of world formation or transformation, such as we find in the doxography for Anaximenes and frs. 15–16 of Anaxagoras.[132]

Heraclitus does not present us with a prosaic account of how the world took shape. The mysterious occurrence of *prēstēr* here – a lightning storm where we expect an element or a cosmic mass – and the enigmatic reference to sea 'pouring out' and 'being measured' show that he has in mind something rather different from the ordinary Ionian cosmogony. Yet he is clearly playing here with that cosmogonic pattern, just as in the doctrine of fire in XXXVII he is

playing with the Milesian notion of an elemental *archē*. The assumption of a temporal sequence is obvious in every phrase of these two sentences, and first of all in the term *tropai* 'reversals'.

In normal literary usage, from Homer to Herodotus, *tropē* has two senses: (1) a rout in battle, when an army turns and runs, and (2) the 'turnings' of the sun at solstice, i.e. the extreme points of sunrise and sunset towards the north in summer and the south in winter, or (2A) the two times of year (in June and December) when the sun reaches these points and begins its movement back in the opposite direction. It is to render both senses that I translate *tropai* as 'reversals'.[133] Since 'the routs of (everliving) fire' is not immediately intelligible, the *prima facie* reading of *pyros tropai* must rely on (2): 'the turning-points of fire', i.e. the extreme points in a periodic movement from something like summer to something like winter.[134] What Heraclitus' words imply is a direct parallel, in poetic terms an identification, between fire and sun. This gives us the clue without which the riddles of XXXVII–XXXIX would remain unintelligible. The measures by which fire is kindled and put out are to be understood as in some sense a re-enactment of the sun's regular course from solstice to solstice. And this link between the annual movements of the sun and the measured death and revival of fire is reaffirmed in the reference in XLIV (D. 94) to the 'measures' of the sun's path as a manifestation of the divine order of the cosmos.

For the sun the *tropai* are the limits in an annual oscillation, marking the seasons of the year. By analogy the *tropai* of fire will not be stages in a graduated sequence but extreme points in some kind of oscillation. This explains why the first 'turning' of fire is not cloud, wind, smoke, or some other item from the atmosphere, as the pattern of Ionian cosmogony would lead us to expect, but sea: the visible mass of water, and thus the opposite of fire, the element that serves precisely to *put it out*. Sea marks the first *tropē* of fire not because fire 'turns into' water by any conceivable physical change, but because water stands at the opposite pole, the extreme 'reversal' which contrasts with fire as winter contrasts with summer, or night with day. In the last analysis, fire and sea are 'one', just as these other opposites are one. But in a more obvious sense, sea represents the death and defeat of fire. Thus the dominant literary meaning of *tropai* as 'routs in battle', which we rejected on first reading, emerges after all as a *hyponoia*.

Such linguistic clues were not understood by the Stoic commentator followed by Clement, who, like Theophrastus and most moderns,

misread *tropai* in the light of Aristotle's use of the verb *trepesthai* for 'transformations' and hence must provide some middle term by which fire can 'turn into' sea: 'he means that fire . . . is turned through air into moisture, as seed or semen for the world formation, which he calls "sea".[135] It was left for the moderns to take *tropai* as 'transformations' and at the same time refuse to allow a middle term between fire and water, sun and sea, thus crediting Heraclitus with the strange theory of an elementary transformation from fire to water, and an equally surprising scheme of 'elements' in which the atmosphere – the *aēr* of Anaximenes – is not even represented! Heraclitus' systematic omission of the term *aēr* may well be intentional – something like a deliberate snub. But he cannot have offered a theory of the natural world in which the *atmosphere* was omitted.

If we stick to the text we do not get ensnared in such strange doctrines. After the first reversal of fire as sea we have the reversal of sea (and the second reversal of fire) as 'half earth, half *prēstēr*'. That is, the turning from sea to its opposite takes two equal forms, in turn opposed to one another. The shift from wet to dry, liquid to solid, results in dry land or earth. Here we establish contact with the traditional pattern of cosmogony, in which the emergence of dry land from primeval moisture or sea is a recognized phase.[136] But if for a moment Heraclitus touches base here in standard cosmology, it is only to bound off again in his own direction with the next words. The other turning from sea is back in the initial direction of fire, and what we expect at this point is some representative of the *aēr* or atmosphere, the product of evaporation from the sea which accompanies its drying up. If Heraclitus had been propounding a physical theory he might have written: 'The reversals of sea (or the reversals of fire starting from sea) means that part of the sea moves in the dry (and cold) direction, further away from its starting point in fire, and becomes earth; part moves back towards fire and warmth and becomes atmospheric vapor, clouds, and wind, thus filling the region between earth and celestial fire, and providing nourishment for the fires aloft.' Something of this sort must be what Heraclitus is alluding to, the theory of Anaximenes or some variant on it.[137] But instead of giving any systematic account of the atmosphere, Heraclitus invokes the *prēstēr*.

The identity of this phenomenon is not beyond dispute. Several recent studies have interpreted the *prēstēr* as a tornado or waterspout. But the Greek literary evidence emphasizes a connection with fire from heaven, as in a lightning storm. The word first appears in

Hesiod's *Theogony* as an attribute of winds (*prēstēres anemoi*) between the mention of lightning and thunderbolt, as an instance of celestial flame.[138] Like Aristophanes and Hesiod, Aristotle associates the *prēstēr* with a whirlwind or tornado, but his brief description does not mention a spiral form. He says that *prēstēr* is the name given to a hot or rarified wind drawn down from the clouds, that catches fire: 'for it sets the air on fire (*synekpimprēsi*) and colors it by its conflagration' (*Meteor.* III.1, 371a 15–17). Aristotle thus explains the name by a derivation from *pimprēmi* 'burn, set on fire'.[139] In Xenophon a *prēstēr* is cited as setting a temple on fire (*Historia Graeca* I.3.1). It must then have involved a lightning storm, like the one Aristotle describes as destroying the temple of Artemis at Ephesus with sheets of fire (*Meteor.* 371a 31ff.). When Herodotus speaks of losses to Xerxes' army caused by 'thunder (*brontai*) and *prēstēres* at night' (VII.42.2), he must be referring to a similar storm. Thus the half-dozen mentions of *prēstēres* in extant Greek literature from Hesiod to Aristotle all point to destructive fire from the sky in a great wind storm, perhaps of hurricane force, but not to a tornado or whirlwind.[140] This sense of *prēstēr* as something like sheet lightning is what Heraclitus must have in mind in XXXVIII. It represents fire in the atmosphere, but not a visible return from sea to sky. For in a thunderstorm the bolts of lightning come dramatically *down*. And the ancient texts regularly speak of *prēstēres* as 'falling' (*empesontos* in Xenophon; *epespiptousi* in Herodotus; *kataspōmenon* in Aristotle, etc.).

Of course if Heraclitus were referring to 'a waterspout attended with lightning' (as LSJ renders Burnet's suggestion of a 'fiery waterspout'), then the movement from sea to sky would be vividly exemplified. For in the case of the waterspout a funnel of cloud descends towards the sea and seems to suck the sea up into the sky.[141] Unfortunately, the Greek literary evidence down to the time of Aristotle and Theophrastus (and perhaps beyond) does not point to any necessary or even normal connection between a *prēstēr* and a waterspout, of the sort we find in Lucretius. So this interpretation of Heraclitus' words is quite unsupported.

On any reasonable interpretation, a *prēstēr* is not an element or a cosmic mass, but a devastating discharge of fire from storm clouds: it illustrates the power of cosmic fire as a visual experience. Compare the thunderbolt of Zeus, the *keraunos* which 'steers all things' in CXIX (D. 64).[142] Perhaps there was some connection in Greek experience between the *prēstēr* and the solstitial seasons. But it seems more

likely that Heraclitus chose the *prēstēr* as a phenomenon that explodes out of season, not a predictable 'turning' but an expression of the power of opposition, manifesting itself as everliving fire.

On this view, *prēstēr* represents half the sea and infinite power. But on any view these 'measures' seem puzzling. How can one strike a balance between a momentary event like the *prēstēr* and the stable mass of earth?[143] And what will be left of the sea if half changes into earth and half into atmospheric fire? This is a problem for any view that takes *tropai* in XXXVII as transformations, and at the same time insists on regarding the half-and-half measures synchronically, as a ratio between constituents of the world at any given moment.

The most plausible among recent interpretations is that of Kirk. 'Naturally Heraclitus means that one-half of sea *can be regarded* as turning to earth (and replenished by earth), and the other half as turning to *prēstēr* (and replenished by fire); the total remains unchanged as sea.'[144] The assumptions underlying this view (which are widely shared), namely, that the measures of XXXVII–XL are to be understood in terms of simultaneous relationships rather than successive phases, will be examined later. Here I remark only that such a view takes no account of the literal sense of *tropai* and the implied analogy to the course of the sun; that it involves reading a great deal between the lines of XXXVIII; and that it is *prima facie* incompatible with the text of XXXIX (D. 31B), which refers to two distinct temporal stages: before and after the sea becomes earth.

I suggest, therefore, that we understand 'half earth, half *prēstēr*' as an enigmatic reference to long-term tendencies in two opposite directions after the production of sea, a reversal that will eventually destroy the sea by drying and evaporation; the vapors themselves are to be thought of as nourishing celestial fire, in the form of sun, star, and lightning. 'Half-and-half' points (a) to the dual production of earth and atmospheric vapor from the sea, and (b) to the fact that the whole cosmic process unfolds according to rigorous measure and symmetry. This is guess-work; but it is guess-work grounded in the text and in the evidence for early Ionian cosmology.

In the measurement of sea in XXXIX we have a clear statement of (b) and a partial statement of (a): 'sea becomes earth'. But what does it mean to say that 'sea pours out' or 'dissolves' (*diacheetai*)? The last words of XXXIX show that a prior change of sea into earth is presupposed. (Perhaps this is to be understood from 'of sea, half is earth' in XXXVIII; or perhaps something is missing between the two fragments.) Hence there is no need to insert the word 'earth' (*gē*) as

subject of 'pours out' (*diacheetai*), as many editors do. With or without this textual change we have a new shift of direction, the reliquefaction of earth as sea, reversing the emergence of dry land.

Now there is some parallel to this in Ionian cosmology.[145] Heraclitus himself says in CII (D. 36) that 'out of earth water is born', and implies that this compensates for the generation of earth which is 'death for water'. In CII we have a process of elemental transformation within the present world order. On my reading of XXXIX, this ordinary cycle of elemental change is an imitation of, or an analogue to, the larger cosmic cycle of formation and reformation of land and sea in XXXVIII and XXXIX. (On the usual reading these two cycles are identical, since the cosmic cycle of XXXVIII–XXXIX is reduced to the elemental exchanges of CII, D. 36.) It would be idle to pretend to a definitive interpretation of such a cryptic text. We cannot tell whether 'sea becoming earth' refers to the well-known Mediterranean phenomena of sinking and rising coastlines – either from deep geological causes (the so-called bradyseism, the slow movement up or down of the earth's crust) or from the silting up of river mouths, as at Ephesus and Miletus – or whether Heraclitus is alluding here to some greater cosmic changes leading up to general conflagration, as Clement says. It may well be that he intends XXXIX to apply ambiguously to both: to visible changes in the relationship between earth and sea and also to the vaster cyclical changes of the cosmos.

Such reversals are conceived as a measured pendulum swing, as in Anaximander's thought of retribution paid 'according to the ordinance of Time'. In emphasizing the equality of exchanges Heraclitus introduces the notion of cosmic order as a pattern of Justice, in which nothing is taken without repayment. (Cf. XL, D. 90 and LXXXII, D. 80.)

The principle of measure, mentioned enigmatically at the end of XXXVII (D. 30), is now clarified as a measure preserved over a sequence of stages, in a temporal progression that returns us to the *status quo ante*.[146] The measures of equality are thus rigorously respected over the long run, no matter how dramatic the reversals may be at any given moment. And since this regularity is expressed by the term *logos* in XXXIX, it is thematically connected with the *logos* of I.2, 'in accordance with which all things come to pass'.

XL

XL (D. 90) All things are requital for fire, and fire for all things, as goods for gold and gold for goods.

By its echo of XXXVII the mention of fire suggests a cosmic application, which is confirmed by the reference to 'all things'. Heraclitus is again playing with the pattern of Ionian cosmology and the element theory of Anaximenes. But the substitution of fire for air does not leave the rest of the theory as it was. Fire represents a process of destruction, and only in this sense can one imagine everything 'turning to fire'. In return, the only thing that naturally arises from fire is smoke and ashes. If fire is chosen as a model for physical transformation, to replace the Milesian model of evaporation and condensation, it will intuitively prefigure the annihilation of nature, the devastation of the world order, as fire in warfare prefigures the burning of the ships, the destruction of the crops and fruit trees, the sack and pillage of a town. This only makes it more paradoxical that fire in XXXVII should represent a world order that is eternal.

Hence I believe the Stoics (and other ancient readers before them) must have been right to think that the imagery of fire for Heraclitus presages some cosmic conflagration or ecpyrosis. And they were right too to think that, in this dimension, the eternity of the *kosmos* can only consist in the recurrence of the same phases, the eternal repetition of cosmic 'reversals' between opposites, whether as oscillations between fire and flood, in the polar catastrophes of Great Summer and Great Winter, or between Fire itself and the world order, as in the Stoic cycle.[147] I doubt that Heraclitus had much more to say about the details of this world cycle than what we read in XXXVII–XXXIX. (But see below on XLII and XLIII.) He was content to suggest a cycle in which fire occupies a dominant position at the end as at the beginning; for in a circle the two coincide (XCIX, D. 103). So much followed from the notions of cosmic symmetry he had accepted from the Milesians (and which he may have applied even more rigorously than they did) once he had chosen fire as his starting point. The vicissitudes of the cycle will then appear as the ever-recurring extinction and rekindling of the eternal flame.

Heraclitus' cosmic cycle was probably a development from Milesian views; it exerted in turn a decisive influence on Empedocles and, later, on the Stoics.[148] Unlike these philosophers, Heraclitus was interested not in propounding but in *using* physical theories to

project a vision of cosmic order and an understanding of human life and death. That is why the question whether or not Heraclitus envisaged a world conflagration, although a great subject of scholarly debate, is not a crucial issue in understanding his thought. (The best of all modern interpreters of Heraclitus, Karl Reinhardt, was in my view passionately mistaken on this very question.) But it is crucial for giving a natural sense to the text of XL.

If we attend to the words and imagery of XL, three points emerge.

(1) Fire possesses a unique and universal value, like gold in a land that has never heard of silver. The imagery of gold suggests the gift of princes and exceptional offerings to the gods.[149] The essential point is that fire is worth 'all the rest' (*ta panta*). This is an echo, and an interpretation, of the unity of 'all things' in XXXVI (D. 50). It establishes a parallel to the sun, who is worth all the other stars (XLVI, D. 99), to the outstanding man of LXIII (D. 49: 'one is ten thousand, if he is the best'), and above all to the aim of superior men (XCVII, D. 29) who choose everlasting fame: 'one thing in exchange for all'.

(2) The polar movement between 'fire, all things' and 'all things, fire' finds a parallel in CXXIV (D. 10): 'from all things one and from one thing all'. The primary application must be to the cosmic cycle that leads from primordial fire to the creation of sea and land and all things – and back again. But this does not exclude the implication that similar exchanges between cosmic fire and other things – the elements, or the cosmic masses – are going on all the time. (The pattern of Ionian cosmogony is designed to serve as a paradigm for understanding the world as it is.) The universal exchange for fire is, in one sense, a fact of human experience: we see all sorts of things going up in flames. But the reverse process, the generation of all things *from* fire, is not a fact of observation at all. It is a pure requirement of theory, a consequence of the principle of symmetry. In this respect Heraclitus' doctrine is equally dogmatic, equally devoid of empirical support, whether it is taken as a claim about continuing processes of nature or as a thesis about cosmogony. If anything, the cosmogonic thesis has an epistemological advantage over the doctrine of a continuous emergence of all things from fire, since at least the former cannot be *falsified* by empirical observation, as the latter clearly seems to be.

(3) The exchange between fire and all things is expressed by the term 'requital' (*antamoibē*) which suggests some principle of compensation or retribution: *antamoibē* may imply reward or punishment, or both at once. The term is perhaps an echo of Anaximander's phrase

about elemental principles 'paying the penalty and making retribution to one another'. Now the alternating aggression and punishment of opposites in Anaximander seems to be a continuous process going on within the world, at present, but a pattern realized 'according to the ordering of time', that is, in a sequence or cycle. There is no need to suppose that Heraclitus is referring only to one cycle, from fire to world and back again. Like Anaximander, he has in mind all possible cycles that illustrate a 'reversal' between poles: day and night, summer and winter, rain and dry weather, youth and old age, life and death. But if the reciprocal exchange between fire and all things is taken as a paradigm for such cycles, as fire itself is taken as a paradigm for the world order in XXXVII (D. 30), then the most natural interpretation of this paradigm – and the primary interpretation of cosmic fire going out and being rekindled in XXXVII – is a pattern of cosmogonic emergence of all things from fire balanced by a similar process in reverse, of the sort sketched in XXXVIII–XXXIX.

Excursus I: On traditional interpretations of the cosmic cycle

Since my interpretation of XXXVII–XL flies in the face of dominant trends in recent scholarship on Heraclitus, I shall here review three of the most influential interpretations, beginning with that of Zeller. My aim is not to evaluate these interpretations as a whole but to examine the assumptions on which they are based, in particular the insistence upon understanding Heraclitus' pattern of cosmic order in terms of synchronic (simultaneous) rather than diachronic (periodic) structure. The reader who is not interested in the history of Heraclitean scholarship may skip ahead to the discussion of the next fragment on p. 153.

For Zeller, the fundamental principle of Heraclitus' thought is the doctrine of universal flux, the continuous change and transformation of all things. This doctrine Zeller found of course in Aristotle, in the doxography, and above all in Plato's account. But he also found it in the fragments on the river (L–LI, D. 12 and D. 91), in the assertion of the unity of day and night (XIX, D. 57), the interchange of living and dead, sleeping and waking, young and old (XCIII, D. 88), and in other texts.[150] Zeller understood this doctrine as an explicitly metaphysical thesis, the derivation of all phenomenal things as transitory appearances of a single entity, 'which engenders them all and takes them all back into itself, and which is the only thing to remain and preserve itself in restless change' (p. 796). From this metaphysical principle Heraclitus derived his physical doctrine that everything is fire by a kind of imaginative intuition, perceiving fire as the natural expression of motion and life (p. 809). Fire for Heraclitus is not an immutable substance or element but the being which is continually undergoing change, passing into all material entities, penetrating all parts of the universe and taking on a different form in each. It is not simply visible fire but heat in general and dry exhalation (*anathymiasis*) in particular (pp. 814f.); not simply phenomenal fire but cosmic fire, *Urfeuer*, the universal being which forms both the source and the substance of all things (pp. 817–19).[151]

It is in this connection that Zeller interprets XL: 'all things are exchanged for fire, and fire for all things' (p. 819); he understands this as a derivation of all

things from a single principle or *Urstoff*, without reference to cosmogony or to any other temporal process. If he nevertheless ascribes a cosmogony to Heraclitus, it is on the basis of XXXVIII (D. 31A) alone, with its mention of the *tropai* or 'turnings' of fire to sea, earth, and *prēstēr*. Schleiermacher and others had taken this as a reference to the cycle of transformations of elements within the present world order; if Zeller feels obliged to reject that interpretation it is not because of anything he finds in the text of Heraclitus, but solely because 'we have no reason to mistrust the assertion of Clement, according to whom the fragment referred to the formation of the world' (p. 847, n. 2). Zeller is a good enough historian to eliminate the more obviously Stoic features of Clement's commentary, but he follows that commentary in taking *tropai* to mean 'transformations'. Hence he reads XXXVIII as saying that primordial Fire first changes into water or 'sea', from which in turn arises the solid earth and the hot and fleeting *prēstēr* (*Glutwind*, flaming wind). In treating XXXIX (D. 31B), Zeller again follows Clement in seeing the return of earth to sea as the first stage of the reverse process that leads to the conflagration (p. 865 with n. 3). As for this final stage, he finds it directly asserted in CXXI (D. 66) 'the fire coming on will judge all things', and notes that it is fully confirmed by statements in Aristotle and all later authors.[152] But neither cosmogony nor conflagration is central in Zeller's account. The basic physical doctrine is the cycle of elemental transformations within the present world order, a cycle which he finds in XL and again in the statement about the upward and downward path: the closer any body approaches to the fiery condition, the higher it rises; the farther it departs from this condition, the lower it sinks. But the transformation moves in a circle, since once the material reaches the condition of earth, at the farthest remove from its original state, it turns back through the intermediate stages and returns to its fiery starting point (pp. 854f.).

The first remarkable feature in Zeller's interpretation is the central role he assigns to the doctrine of flux, understood as a physical cycle of elemental transformation. (Here Zeller follows Plato's account at *Timaeus* 49Bff. – as many others have done in assigning an elemental cycle to Heraclitus. The evidence for such a cycle in the fragments is, in effect, limited to CII, D. 36, unless one accepts the authenticity of XLI, D. 76.) The other remarkable feature is the extent to which his argument for cosmogony and ecpyrosis depends upon the authority of Clement, Aristotle, and other secondary sources. If XXXVIII–XXXIX are interpreted by him in this light, it is because 'we have no reason to mistrust Clement', and not because of any close analysis of the text and its pre-Socratic parallels, as has been attempted here. The only other fragment he cites in support of ecpyrosis is the judgment of all things by fire in CXXI (D. 66). If the authenticity of CXXI can be called into question, if the authority of Clement, Aristotle and the doxography can be successfully challenged, and if the text of these two or three fragments can be shown to bear another sense, Zeller's whole case for cosmogony and ecpyrosis must collapse.

This sapping operation will be the work of Burnet, completed by Reinhardt. Burnet starts from a different fundamental insight: not the doctrine of flux but the unity of opposites. 'The truth hitherto ignored [sc. by Heraclitus' predecessors] is that the many apparently independent and conflicting things we know are really one, and that, on the other hand, this one is also many. The "strife of opposites" is really an "attunement" (*harmonia*) . . . Wisdom is . . . a perception of the underlying unity of the warring opposites' (Burnet, p. 143). This leads Heraclitus 'to seek out a new primary substance'. His principle of fire 'was something on the same level as the "Air" of Anaximenes', but chosen to represent a certain view of unity and stability within a process of constant change. 'The

quantity of fire in a flame burning steadily seems to remain the same, the flame seems to be what we call a "thing". And yet the substance of it is continually changing. It is always passing away in smoke, and its place is always being taken by fresh matter from the fuel that feeds it.'[153] Thus Burnet returns to Zeller's own starting point but from a different point of view: the essential feature of the process of transformation is that the *structure* and *pattern* of things remains constant. 'How is it that, in spite of this constant flux, things appear relatively stable? The answer of Herakleitos was that it is owing to the observance of the "measures", in virtue of which the aggregate bulk of each form of matter in the long run remains the same, though its substance is constantly changing' (p. 150). In this connection Burnet cites the measures according to which everliving fire is kindled and extinguished (XXXVII, D. 30), the exchange of all things for fire and fire for all things (XL, D. 90), and the measures which the sun will not exceed (XLIV, D. 94).

Before turning to Burnet's attack on cosmogony and ecpyrosis, I must point out that, despite his illuminating account of the symbolism of fire and river in terms of a *structured pattern of change* rather than a metaphysical unity 'behind' or 'underneath' the appearances, his version of the doctrine of measures cannot easily be accommodated to Heraclitus' text. In trying to make sense of the extinction and rekindling of an everliving fire, a reference to 'the aggregate bulk of each form of matter in the long run' does not appear, at first sight, to offer a plausible solution. (If Burnet's version has come to seem natural, that is only because it has been repeated by so many interpreters, beginning with Reinhardt.) And the measures which the sun will not overstep must mark its path in the sky, charted daily or over the course of a year. Only in the *logos* by which sea is measured in XXXIX (D. 31B) do we have any reference to the bulk of some form of matter, but the equality there is explicitly said to be not constantly maintained but *restored* to what it was at some previous time (before it became earth, according to the text accepted by Burnet himself). In both cases, then, where the meaning is clear, the measures represent a symmetry or equality maintained by a periodic recurrence. Here the temporal dimension is not negligible – as it may be when one talks of things 'remaining the same in the long run' – but *essential*: for Heraclitus as for Anaximander the measures of justice are recognizable only as 'an ordering of time'. And a diachronic interpretation for the first case also, that is, for the measures by which cosmic fire is put out and rekindled, is suggested not only by the parallel between fire and sun introduced with the term *tropai*, but also by the common-sense observation that a fire is not ordinarily kindled and extinguished *at the same time*.

The three passages just discussed are the only ones in which the terms *metra* or *metreisthai* ('measures', 'to measure') occur, but there are several in which *logos* may convey this sense. Thus we have two statements referring to the *logos* of the soul, first of all in XXXV (D. 45): one cannot find the 'limits of psyche' because it has such a deep *logos*. And there is also the somewhat dubious fragment CI (D. 115): 'To the soul belongs the *logos* which augments itself.' In neither text is the meaning of *logos* crystal clear, but it cannot be found in any preservation of 'the aggregate bulk of each form of matter in the long run'. If there is any reference to bulk at all (which is not obvious), it must be to a magnitude that *increases* or whose limits cannot be discovered. And even if, as I believe, the *logos* of I.2 'according to which all things come to pass' is also intended as a suggestion of measure, that statement is too cryptic to tell us what kind of measure is involved.

There are, however, some texts and testimonia that refer unambiguously to measure or equality preserved over time. That is so for the cycles and seasons

mentioned in XLII (D. 100), the Great Year in XLIII (DK A 13 and A 5), the extinction and renewal of the sun each day (XLVIII, D. 6), and the generational measure of thirty years as a return from childhood to childhood (XCV, DK A 19; and compare XCVIII, D. 20). Succession rather than simultaneity is also suggested by the identification of deity with 'day and night, winter and summer, war and peace, satiety and hunger' (CXXIII, D. 67). It is again a diachronic rather than a synchronic pattern that emerges from the 'transposition' (*metapesonta*) and equivalence between 'living and dead, waking and sleeping, young and old' (XCIII, D. 88). So it is reasonable to assume that it is successive stages in time, rather than some mysterious identity at every moment, that is implied by the equation of mortals and immortals, 'living the other's death, dead in the other's life' in XCII (D. 62).[154] Similarly, when we hear that 'the beginning and end are common' in a circle (XCIX, D. 103), there is reason to think of a cycle of periodic recurrence. All the more so for CII (D. 36): 'for souls it is death to be born as water, for water it is death to become earth; out of earth water comes to be, out of water soul'. Here the terminology of birth and death makes clear that we are dealing with a cycle of successive stages, where equivalence is expressed as recurrence. It may or may not follow from such a pattern of transformation that, in Burnet's words, 'the aggregate bulk of each form of matter in the long run remains the same'; but that is most certainly not what CII (D. 36) *says*.[155]

In sum, the notion of periodicity, of measure and equality preserved by regular recurrence over time – whether a single day, a lifetime, or a Great Year – is a central theme in the fragments. If there is *one* notion of measure that predominates in Heraclitus' thought, it is this one; in fact, this is the *only* notion of measure clearly illustrated in the texts.

Now the unity or harmony of opposites can also be exemplified in states or processes envisioned at a single moment, as in the case of the bow (LXXVIII, D. 51), where the archer's arms and the parts of his instrument are stretched in opposite directions at the instant of maximum tension, just before the arrow is released. In that case the unity and balance of opposites is realized by their simultaneous operation, their momentary co-presence.[156] Heraclitus' doctrine of *harmonië*, the equilibrium and fitting-together of opposites, is not reducible to the theme of periodicity or recurrence. But, I submit, the doctrine of measure is so reducible. In every case where the notion of measure or *quantitative* equality is clearly applicable in the fragments, the only unmistakable applications are to cycles of succession and recurrence. And that even holds for the one case where what is measured seems to be the bulk of a form of matter (XXXIX, D. 31B).

This point is of primary importance, since Burnet's case against the cosmic cycle of world formation and conflagration in Heraclitus depends very largely upon the claim that 'it is inconsistent with the central idea of his system, the thought that possessed his whole mind' (pp. 158f.). According to Burnet, that thought is 'the perception of the underlying unity of the warring opposites' (ibid. p. 143); and he has interpreted this unity in exclusively synchronic terms (in the light of the bow image as reinforced by Plato's contrast between Heraclitus and Empedocles, p. 144), so that the harmony of opposites, and the measures that preserve it, are *identified* with a simultaneous condition of equality, rather than with some periodic restoration of the balance. As a result, when Burnet comes to discuss the phenomena of periodicity which he recognizes within Heraclitus' thought, he is obliged to describe these as an *exception* to the doctrine of fixed measures![157] A cosmic cycle of conflagration followed by recurrent world formation is 'inconsistent with the central idea' of Heraclitus' system only if this idea is construed in terms of momentary rather than diachronic

balance. There is no inconsistency if the *kosmos* which is 'the same for all' is conceived as a pattern spread out over time, like a sine curve in wave theory: a fixed cycle of transformations between polar extremes. The evidence from the fragments in favor of such a diachronic view is, I hope to have shown, overwhelming. Simultaneous equality, as in the drawn bow, is a particular case of the unity of opposites. It is not the pattern of cosmic order as such.

When Burnet comes to discuss XL he again finds an argument *against* the conflagration. 'When gold is given in exchange for wares and wares for gold, the sum or "measure" of each remains constant, though they change owners. All the wares and gold do not come into the same hands. In the same way, when anything becomes fire, something of equal amount must cease to be fire, if the "exchange" is to be a just one.'[158] Since this argument has exerted a considerable influence, we must look a little more closely at its logic. It infers that if the cosmic process reached a point where all things were absorbed into fire, or had not yet emerged from it, then by analogy there would have to be a market situation with *only* gold and no merchandise (or with all of both confusedly in the same hands). But of course there is normally no such situation. Therefore Heraclitus cannot have used the market simile to express a cosmic development into and out of fire.

Now this argument is cogent only if we add a premiss to the effect that (i) Heraclitus intended the market simile to be applicable to cosmic fire in every respect, or (ii) the relevant respect is just the continuity of exchanges based upon a permanent distinction between coins and merchandise. Now the first premiss is absurd: no philosopher can use a simile or comparison that is apt in *every* respect. And the second premiss, though not absurd, is quite arbitrary: it guarantees the desired conclusion by begging the question at issue. Hence this interpretation of XL provides an argument only if we need none, that is to say, only if we are already convinced that the point being made is just that the rules of cosmic exchange exclude a passage of all things into fire. Those who are not convinced will find the meaning of the simile elsewhere, in the equivalence established between fire and all things, and in the formal parallel to CXXIV (D. 10): 'from all things one and from one thing all'. Together, these two points guarantee that the measures of cosmic order will be preserved even in the case of the most radical change conceivable: the total extinction of cosmic fire or its rekindling at the cost of everything else.

It was Karl Reinhardt who created the modern study of the pre-Socratics by insisting that archaic thinkers like Heraclitus and Parmenides could only be understood by careful study of their own words, not by taking over the interpretations worked out from a later point of view by Aristotle and Theophrastus. For Heraclitus Reinhardt went further and showed how different views of his thought are projected according to the philosophical interests and presuppositions of each author who quotes him. It was easy enough for Reinhardt to undermine Zeller's position on the ecpyrosis by pointing out how largely it depended upon Clement's interpretation, whereas this interpretation in turn can be shown to derive from some Stoic commentator.[159] In addition, Reinhardt deprived Zeller's interpretation of its most picturesque support within the text by rejecting as a Stoic or Christian paraphrase the reference to judgment by fire in CXXI (D. 66). This passage will be considered in its place. For the moment we look at Reinhardt's interpretation of the concept of measure, which determines his understanding of XL.

Reinhardt begins by suggesting that if the measures of cosmic fire in XXXVII (D. 30) are to be interpreted in terms of world formation and conflagration, they must mean that each world period 'takes the same length of time, represents the

same development, as all the others'. (*Parmenides* pp. 176f. This is not entirely accurate. As we have seen, the doctrine of measures preserved over time means that even the most radical extremes, fire alone and all things in the universe, are in some sense equivalent or of equal value, so that the measures of equilibrium are preserved by a regular oscillation from one pole to the other.) Against this over-specific interpretation of XXXVII (D. 30), Reinhardt offers two objections. First, 'no Heraclitus was needed to teach that: that was the concept of *diakosmos* from the very beginning, as taught by the old Milesians'.[160] Reinhardt's second objection is: 'How can such a sense be hiding in such words? *Metra* must rather mean the quantity of matter (*Stoffmasse*) transformed by being burnt up and extinguished', since this is the sense expressed by the verb *metreitai* ('is measured') in the following context (XXXIX, D. 31B). 'The measure of the sea remains the same, while the material is continually changing . . . the water flows by, but the river remains always the same (L, D. 12). The sun is new every day, and yet will in all eternity never transgress its measures (XLIV, D. 94) . . . Thus the *pyros tropai* too, the transformations of fire, are not alternating periods but a continual transition between material opposites' (ibid. 177). 'Earth is only transformed fire, fire is transformed earth, as the dead are only the living deceased, the living are dead reawakened to life . . . the inner unity, the *tauton*, the "invisible harmony" (LXXX, D. 54) becomes visible only through duality, contradiction, and eternal exchange' (p. 179). It is in this context that Reinhardt cites, without further commentary, the exchange of fire for all things in XL.

It will not detract from Reinhardt's great services to the interpretation of Heraclitus if we note that, on the question of 'measures', his view is largely identical with that of Burnet. In his eagerness to deny the doctrine of world periods, he is even prepared to overlook the importance of periodicity and to interpret the concept of measures exclusively in terms of the relative proportion of cosmic masses and the like *at the present moment*.[161]

Agreeing with Zeller, Burnet, and Reinhardt on so many points, I must also agree that Heraclitus' conception of the universal structure of things can be illustrated by instantaneous or momentary phenomena, like the tension of the drawn bow, or by processes spread out in time that are not necessarily cyclical or periodic, like the flowing of water in a river and the tuning or playing of a lyre. But I insist that the most systematic expression of cosmic structure in the fragments refers to processes of a cyclical character, like the pattern that unifies day and night. And I see no reason why Heraclitus should have failed to find this same pattern of symmetry and balance in the Milesian doctrine of world formation, as long as it is completed by the reverse process of a return to the starting point. The unity of primordial fire and differentiated world is simply the unity of day and night written in the largest possible letters, like the unity of summer and winter within the rhythmic structure of a great or greatest year. That he did in fact play with this tremendous pattern, like Anaximander, like Empedocles, and like a modern cosmologist (but perhaps with more irony), seems to me established not because we can trust Clement's interpretation, but because we can trust the direct and vivid sense of the words and imagery of the fragments.

It would be tedious to prolong the polemic by considering in detail the recent reformulations of the Burnet-Reinhardt view by Kirk and Vlastos. I would in conclusion only ask how, if cosmogony is to be excluded, the equivalence between fire and *all things* is to be understood. (This is the same as to ask: in what sense are all things 'reversals of fire'?) Within the cosmogonic pattern the answer is easy and obvious. Without it, any answer must be arbitrary and contrived. If the chronological priority of fire is denied, then the only priority left for it is symbolical and perhaps metaphysical. But there is no *physical* sense in which it

is true to say that all things are exchanged for fire, but false to say that all things are exchanged for water or for earth.[162]

XLI

XLI (D. 76) Plutarch: [As Heraclitus said, the death of fire is birth for air and the death of air is birth for water.]

The authenticity of this, one of the most familiar of all quotations from Heraclitus, was challenged long ago by Zeller and has often been denied since.[163]

On the question of authenticity, we cannot arrive at any definite conclusion. But there is a more important and less controversial point to be noted: that Heraclitus spoke of a cyclical pattern of elemental transformation in terms of birth and death. For that is precisely the point which this text has in common with CII.

Since my commentary on XLI–XLIII will be more concerned with problems of documentation and the reliability of our sources than with the interpretation of Heraclitus' own text, I have grouped this discussion as Excursus II. The questions at issue may be of little interest for the general reader. The commentary proper resumes on p. 158.

Excursus II: On the documentary basis for XLI–XLIII

As a verbatim quotation of XLI, the only plausible candidate is the text of Plutarch given above. The version of Maximus of Tyre, 'Fire lives the death of earth and air lives the death of fire; water lives the death of air, earth that of water', although preferred by Bywater and given first place by Diels, is obviously a free variant, imitating the language of XCII (D. 62), which Maximus has just cited.[164] Hence Maximus is alone in speaking of *life* and death here, where Plutarch and Marcus Aurelius speak of birth and death, as in CII (D. 36). Also, his version of the cycle is asymmetrical, and the leap from earth to fire has no parallel either in other fragments or in other early theories. Any judicious comparison of the candidates for XLI will lead to the elimination of this version.[165] Much the same can be said for the citation in Marcus Aurelius. Unlike Maximus, Marcus knows Heraclitus well; but he quotes from memory, and his verbal memory is not particularly good. It is doubtful whether any of the numerous citations from Heraclitus in Marcus' *Notebooks* gives us the original text. The quotation here is continued by V (D. 71–3), where we can recognize a vague paraphrase of IV (D. 17, from Clement). There is no reason to suppose that Marcus' version of XLI is closer to the original.

So we are left with Plutarch's text, and with the special problems surrounding quotations in Plutarch. Plutarch is a man of vast erudition, with a special fondness for Heraclitus. One of his lost works was entitled 'What were Heraclitus' doctrines?' (Lamprias Catalogue no. 205, in the Teubner *Moralia* VII, ed. F.H. Sandbach, p. 9.) Over 60 citations or clear allusions to Heraclitus have been

pensable function in the cosmos, and certainly to suggest a pattern of periodic extinctions and rekindling that is both an example and a paradigm for the measured lighting and quenching of cosmic fire (in XXXVII, D. 30). The remark about the dependence of daylight on the sun was probably intended to point to the union of day and night (XIX, D. 57).

In XLIV (D. 94) the sun is presented as an anthropomorphic being pursuing his daily path. In XLVIII the sun is again animate, passing from youth to age; but its vitality is there conceived as fire, kindled and quenched. When we turn to the Theophrastean doxography, we find this imagery of kindling and quenching taken literally in a quasi-mechanical explanation of the sun, moon, and stars, according to which these phenomena are produced by the gathering and igniting of bright exhalations in certain celestial bowls or basins (*skaphai*). If we could accept Theophrastus' report as reliable, we would have a rather detailed account of astronomical and meteorological theories. But these doctrines are so different from the allusive and ambivalent manner of Heraclitus in the preserved fragments that I do not think we can rely upon them for an understanding of his thought. For this material see Appendix IIA.

XLIX

XLIX (D. 126) Cold warms up, warm cools off, moist parches, dry dampens.

Heraclitus here describes qualitative changes between physical opposites in the language of felt experience rather than scientific observation.[194] The verb *theretai* 'warm up' can be used of a person warming himself by the fire. The word for 'cools off', *psychetai*, suggests an application to human souls (*psychai*). This presentation of the cold and the hot as if they were living beings reflects Heraclitus' view of the underlying identity between the psyche and the physical elements. (See below on CII, D. 36.) When Heraclitus speaks of the cosmos as a *living* fire, we must take him at his word.

The conception of elemental opposites illustrated here comes from Miletus; it is found again in the fragments of Anaxagoras and other fifth-century writers, before being incorporated into the canonical doctrine of Aristotle (for whom the four elementary bodies are defined by one member from each of the two pairs: hot-cold, wet-dry). What Heraclitus expresses, then, is not so much his own thought as a common presupposition of Greek natural philosophy from Anaxi-

even if all his other words were lost. Hence I prefer to regard 'One cannot step twice' as an independent fragment, perhaps designed to complete L (D. 12) by drawing an even more radical conclusion: since new waters are ever flowing in, it is in fact *not* possible to step into the same river twice. Or, more plausibly, the formula of LI may have been stated first, with L following as its justification: 'One can never bathe twice in the same river. For as one steps into [what is supposed to be] the same rivers, new waters are flowing on.'[200]

What follows in Plutarch is a long description of the fleeting character of mortal existence, along the lines of the passage from the *Symposium*. In the context of several citations from Heraclitus comes a series of phrases describing the transitory character of human existence: 'It scatters and again gathers. (Or rather, not again nor later but at the same time) it forms and dissolves, and approaches and departs.' The words in parenthesis are pretty clearly a Plutarchean interpolation, inspired by Plato's contrast between Heraclitus and Empedocles in the *Sophist* (242D–E). But the three pairs of contrasting verbs are intended to suggest Heraclitus' taste for antithesis; and any pair – or even all three – might reflect Heraclitus' text. The last pair ('it approaches and departs') would fit the river image perfectly; the other two suggest processes of cosmology or meteorology. All three pairs have had their advocates among modern scholars; no one pair has imposed itself as obviously authentic.[201] Our best course is to admit uncertainty and turn to more reliable information.

LII–LIII

LII–LIII (D. 84) Plotinus: [Heraclitus left us to guess what he meant when he said . . . 'it rests by changing' and 'it is weariness to toil at the same tasks and be <always?> beginning'.]

These two brief citations do not give us a firm grip on the text of Heraclitus. Plotinus is quoting from memory, and we have no way of telling how far his memory reflects his own reading of Heraclitus or some more traditional account.[202] Plotinus takes both sentences to refer to the soul in its blessed condition before the fall into the body; we are free to take them otherwise.

'It rests by changing' can be read as an impersonal construction with no definite subject, like 'rest comes through change'. But the connection between 'rest' (*anapauesthai*) in LII and 'weariness' (*kamatos*) in LIII, reinforced by the occurrence of these terms as a

The connections of the bow with death and destruction are obvious enough. But how can it also stand for life, or for some union of the two? One might think of the use of the bow in hunting, where the death of animals sustains the life of the killers. But probably more is meant here, some deeper connection between life and death such as is indicated in XCII (D. 62) and XCIII (D. 88). Taken alone, LXXIX can only stand as a *griphos*, a riddle in which the name of the bow hints at some larger meaning that we cannot yet make out.

LXXX

LXXX (D. 54) The hidden attunement (*harmoniē*) is better than the obvious one.

This is one of the shortest and most beautifully designed of the fragments. Out of four Greek words (*harmoniē aphanēs phanerēs kreittōn*) two are presented as epithets of *harmoniē*, while the third is construed as epithet of the same noun elliptically understood (in the genitive). Two of these three adjectives are formally related as positive and privative: *phaneros*, *aphanēs* 'apparent, unapparent' or 'obvious, hidden'. By placing these terms in central position, Heraclitus has exhibited the unifying role of opposition within the verbal structure of this brief sentence. And by affirming that the negative term is superior to the positive, he has expressed in a formal way the dialectical re-evaluation of the negative principle that characterizes so much of what he has to say about the opposites.

Any exegesis of LXXX must be speculative, since the sentence itself does not specify what is meant by the hidden *harmoniē*. But a literal reading poses no real problems, as long as we avoid the trap of supposing that Heraclitus intends his words to be taken in only one sense. The range of meaning for *harmoniē* is too wide for any one rendering to be adequate. As partial translations we might offer 'Sweeter than heard harmonies are those unheard' (after Keats), or 'Hidden structure is more powerful than visible structure' (after Bronowski). If we give up the attempt to render *harmoniē*, the rest can be translated literally as: '*Harmoniē* which does not appear clearly is superior to that which is clear and apparent.' The adjective *kreittōn* is again polysemous, meaning 'stronger, more powerful', but also 'better, more desirable'. The latter will presumably be the natural sense on first reading; the physical or political notion ('stronger', 'dominant') brings with it a deeper interpretation. For once we take

kreittōn in this sense, it suggests a verbal allusion to the 'divine one' mentioned in XXX (D. 114), which 'prevails (*kratei*) as it will and suffices for all'. The universal *harmoniē* or fitting together and the divine unity that structures the world are only different modes of designating the same principle.

The phrase 'hidden structure', *harmoniē aphanēs*, might thus be taken as a general title for Heraclitus' philosophical thought.[269] And it is no accident that the same title may describe his mode of expression, where the immediate 'surface' meaning is often less significant than the latent intention carried by allusion, enigma, and resonance.

What is the contrasting notion of *phanerē harmoniē*, the 'visible structure' or 'plain attunement'? In the musical sense, the manifest *harmoniē* must be the tune, the fitting together of notes produced by the musician and apprehended by the audience. On this reading LXXX states that the less conspicuous attunement (between human or cosmic opposites) is finer and more powerful than the harmonies of the lyre. But if *harmoniē* is taken physically, as the construction of a bow or any work of plastic art, then the thought becomes: no joiner builds as well as the pilot of the universe. No work of art achieves a unity and fitting together as strong as the natural *kosmos* which most men fail to see.

These musical and structural senses of *harmoniē* are combined in the Pythagorean notion of the *harmoniē* of the heavens, the cosmic music ordered by the basic ratios of 2:1, 3:2, 4:3. Now the music of the heavens, according to the Pythagoreans, is something we cannot hear. In this sense it is *aphanēs*, hidden. In view of Heraclitus' conspicuous antipathy for Pythagoras, it is not likely that the *harmoniē* he has in mind in LXXX is just the one defined in the Pythagorean doctrine – even if we could be sure that the doctrine in question was known at this time.[270] But just as Heraclitus' doctrine of the psyche and its destiny after death can only be understood as a modification and development of Pythagorean ideas, so perhaps his conception of an all-pervasive *harmoniē* is best seen as a response to Pythagoras' own conception of the world in terms of the musical numbers. The ratios 2:1, 3:2, and 4:3 will represent the underlying, non-apparent fitting together of strings and instrument that permits the musician to produce tones that are *perceived* as consonant or concordant.

Thus the connection between measures, cosmic order, and the pattern of opposites and their agreement, could have been suggested to

Heraclitus by a Pythagorean concept of musical *harmonia* in numerical terms, presented as a key to the structure of the heavens. Now the notion of cosmic measures goes back to Miletus.[271] But Heraclitus' own conception of this order in terms of *logos* and *harmoniē* is more directly intelligible as a generalization of the Pythagorean notion of the musical ratios, where these are conceived as a principle of 'attunement' by which opposing principles are reconciled and set in order, as Philolaus says (DK 44.B 6). Philolaus comes later, of course, and it is possible that his own conception of a cosmic *harmonia* joining the opposites by musical proportion is itself derived from Heraclitus. It is my guess that the line of influence goes in the opposite direction, and that Philolaus here preserves an old Pythagorean view utilized by Heraclitus.

LXXXI

LXXXIA (D. A22) Aristotle: [Heraclitus reproaches the poet for the verse 'Would that Conflict might vanish from among gods and men!' (*Iliad* XVIII.107). For there would be no attunement (*harmonia*) without high and low notes nor any animals without male and female, both of which are opposites.]

LXXXIB Scholia A to *Iliad* XVIII.107: [Heraclitus, who believes that the nature of things was constructed according to conflict (*eris*), finds fault with Homer <for this verse>, on the grounds that he is praying for the destruction of the cosmos.]

There is only one point here that clearly goes beyond a summary of doctrines better preserved in other quotations, namely, that Heraclitus introduced his own apotheosis of strife and warfare by a rejection of the prayer uttered by Achilles in his great speech of regret over the quarrel with Agamemnon. This attack on Homer, which must be connected with Heraclitus' own view of war in LXXXII–LXXXIII, is the counterpart to his criticism of Hesiod for failing to recognize the unity of night and day. Homer and Hesiod, the pre-eminent wise men and teachers of the Greeks, represent the general folly of mankind in failing to perceive the 'unapparent *harmoniē*' in which the tension between opposing powers is as indispensable as their reconciliation within a larger unity. The thought here is probably connected with the riddle of XXII (D. 56) where Homer like other men is 'deceived in the recognition of what is apparent'. For to *recognize* the apparent is precisely to see it within the framework of the hidden fitting together.