

873
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Early Greek and Roman Environmentalists

by
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Pythagoras, Hippocrates, Aristotle and Plutarch had much in common with today's ecologists. What was the mainspring of their philosophy? And why were their views ignored?

When Alexander the Great was in India, Plutarch tells us, he tried to pose difficult questions to some Indian philosophers. Of one he asked, "Which animal is the most cunning?" The gymnosophist was quick with his reply: "That one which men have not yet discovered."

No modern defender of endangered species could have made the point more succinctly. The classical writer was aware of an apparent enmity between men and the other animals in which mankind is dominator or destroyer and the others slaves or victims. This prevailing attitude toward animals of those who share the tradition of Greece and Rome is only one aspect of the "great divorce" between mankind and nonhuman nature that looms so large in the history of Western thought. In an earlier article, "Ecology in Ancient Greece" in *Inquiry* (1975), I have tried to trace in ancient history some roots of the dominant Western attitude toward nature. In this essay, I will attempt to investigate ideas and practices which, if not dominant, were potentially more constructive.

Four sets of attitudes are to be considered here. First, one based on certain conceptions of the gods and their relationship to man will be examined. A Greek or Roman deity embodied a complex of traditional attitudes and practices, some of them exceedingly ancient and ingrained in the lives of the people of classical times. The gods invested aspects of nature with sanctity and gave their protection to segments of the natural world.

The Role of the Gods

Everyone knows that the gods were spirits of nature. The god of the sky was Zeus who "sometimes shines brightly, sometimes rains."² Poseidon was god of the sea, Demeter of growing plants, and so forth. But even those gods whose primary associations were with aspects of human life had much to do with nature as well; indeed, the Greco-Roman traditional religious perspective did not distinguish sharply between human beings and the rest of the natural world. Aphrodite stirred passions not only in human beings, but also in "birds that fly in air and all the many creatures" of land and sea.³ Among her followers were wolves, lions, bears,

and leopards. The music of Apollo's lyre-accompanied voice charmed a "tawny troop of lions" along with "dappled lynxes" and fawns in the mountain forest, causing them all to dance with delight.⁴ Asclepius healed by means of snakes. None of the great Greek or Roman gods, and few of the minor ones, lacked identification with elements of the natural environment.

Some were predominantly gods of nature. Pan was a watcher of the herds who loved "soft streams," "close thickets," and also "snowy mountains and rocky peaks."⁵ He could sometimes offer protection to wild creatures. But the greatest protector of natural things was Artemis, the Roman Diana, the Mistress of Wild Animals (*potnia theron*), whose favourite places were "mountains, and forests green, and lonely glades, and sounding rivers,"⁶ whose favourite activity was hunting. Let us turn our attention for a while to this goddess and to what she reveals about early attitudes toward hunting as a mode of human relationship to the natural world.

Artemis

Many of the myths made Artemis something of a game warden; in one variant story, Artemis, or possibly Ge, slew the mighty hunter, Orion, because he boasted that he would kill all animals. Artemis did away with another hunter, Actaeon, by the horribly appropriate method of having his own hounds tear him to bits, ostensibly because he spied on the goddess while she was bathing, but one suspects that there was an earlier version of the myth in which his crime was hunting the sacred deer of Artemis. That is exactly what Sophocles said Agamemnon did to earn his punishment, when "taking his pleasure in her sacred grove, he startled an antlered stag with dappled hide, shot it, and shooting made some careless boast."⁷ Artemis demanded the life of Agamemnon's own daughter "in quittance for the wild creature's life." Guthrie calls this incident "perhaps the earliest example of a game preserve,"⁸ but I would suggest that divine protection of wildlife is far older than Agamemnon. Artemis was guardian especially of the young of wild animals; she was "gracious to the tender whelps of fierce lions and took delight in the

suckling young of every wild creature that roves the field."⁹ The cults of Artemis included dances done by children called "bears" or "fawns," probably originally dressed in animal costumes. Here we should emphasize that Artemis's animals are almost exclusively the wild game species that would engage the attention of hunters, not the domestic charges of farmers and herders. The possible exception is the goat, but that creature easily becomes feral, and there were wild goats on most mountains around the Mediterranean.

How can we reconcile with Artemis's protective role the fact that she herself was represented as the huntress par excellence, the "destroyer" who loves hunting wild beasts, accepts the hunters' gifts of wild game, and even holocausts of wild creatures offered to her, as for example in Patrae? How can Artemis, mistress of wild creatures, also be patron goddess of hunters? The apparent contradiction comes from regarding hunter and prey as enemies, a view often expressed by classical writers, to be sure. But preserved in the cults of Artemis and Diana are survivals of earlier attitudes and practices from the time when ancestral societies sustained themselves by hunting, when the animals were seen as powerful beings endowed with spirits like those of human beings, and when hunting was regarded as a "holy occupation" in which both hunter and game animal participated. The hunter was expected to propitiate the animal and to treat it, either dead or alive, with respect. A certain sportsmanlike survival of this earlier functional attitude can be traced in the share of the hunter's bag or fisherman's creel that was offered to Artemis, as well as in Xenophon's remark that "hares below a certain age are left alone as sacred to the goddess."¹⁰ Kenneth Clark sees sacrifice in somewhat the same light: "While men still felt a kinship with animals, to eat them was a crime against the group, and expiation could be achieved only by a ritual feast in which all men were involved."¹¹ In Greek and Roman sacrifice almost all the meat was eventually consumed by the people. The good hunter, then, who had approached the goddess in respect and

observed the proper customs, could expect the kindly permission if not indeed the active aid of the goddess.

Sacred Groves

But the careful hunter would never intrude on the sacred territories set aside for the gods. Agamemnon's sin, not simply to kill a deer but to do so in a sacred precinct, was avoided by pious Greeks and Romans. Such precincts, called *temene* in Greek and *templa* in Latin, were areas set aside, usually containing groves of trees and springs or other water, though often mountaintops or other prominent features of topography were so treated. They were very numerous, and within them the environment was preserved in something like its natural state, modified usually only by the addition of an image of the god and perhaps a shrine or temple to protect it. To understand the preservation of groves, we must recall the Greco-Roman attitude toward trees. Classical writers recognized that forests, the groves themselves, were the original temples. Trees were sacred to the gods: the oak to Zeus, the laurel to Apollo, the willow to Hera, the pine tree (or perhaps an oak) to Pan. In fact, trees in general were sacred to the gods; Vergil said that every grove was sacred to Diana. As Pliny explained, "The woods were formerly temples of the deities, and even now simple country folk dedicate a tall tree to a god with the ritual of olden times; and we adore sacred groves and the very silence that reigns in them no less devoutly than images that gleam in gold and ivory."¹²

The Forest's Protectors

Stories were told of the protection of trees by the dryads, the spirits whose lives were so closely bound to their trees that to cut one down might kill the nymph who lived in it. Such acts did not go unpunished; Erysichthon, who cut an oak in Ceres' sacred forest, found himself cursed with insatiable hunger as a result of the dryads' complaint. As a punishment for upsetting the balance of nature, hunger seems singularly appropriate.

Protection of sacred groves was not merely matter for myths; Frazer's *Golden Bough* notes a number of cases where cities passed laws for-

bidding the cutting of trees, removal of wood or leaves, the pasturing of cattle, sheep, or pigs, or planting of grain in sacred groves under penalty of stiff fines, including mandatory sacrifice, and, in one case involving a slave, fifty lashes. Witnesses were required to report the transgressions or suffer similar penalties. The rules of the Arval grove of Dia went so far as to require replacing every tree that fell with a newly planted one. Illegal cultivation of Apollo's sacred land near Delphi was the announced cause of war. To the Greeks and Romans, the sanctity of holy groves was a practical matter in which local ordinances buttressed the retribution of the gods without necessarily replacing it; Cleomenes of Sparta set fire to a sacred grove and was visited by the gods with madness (the fact that five thousand Argives burned to death in that forest fire should also be mentioned).

The practical result of the careful preservation of sacred groves, forbidding even the carrying away of broken limbs in some cases, was the survival of venerable stands of trees after the surrounding areas had been deforested. These were the classical "national parks," small "wilderness areas" surrounded by vast tracts of "clearcutting". Pausanias remarked upon the gigantic size of the trees he saw in these relict forests, some so large as to overshadow hills or to allow people to picnic or sleep in their hollow trunks.

High mountains were also set aside as sacred localities. Sometimes a throne was erected on the summit for Zeus or another deity. The followers of mountain-born Dionysus possibly held that the uplands where they danced in their annual mysteries were set aside for special use. Sometimes a whole island, like Delos, was consecrated as a *temenos*.

Protection within the sacred limits was, as we have already noticed, extended to animals. Generally speaking, hunters were not allowed to go inside with their dogs and weapons. On Mount Lycaeus, if a hunter saw his quarry go into the precinct of Zeus, he had to wait outside, the belief being that if he entered he would die within the year. In places there were deer sacred to Persephone and deer and wild goats sacred to Artemis, none of which could be hun-

ted, although a "special permit" could be issued when a sacrificial victim was desired. There were tortoises on an Arcadian peak and, as Pausanias noted, "the men of the mountain fear to catch them, and will not allow strangers to do so either, for they think they are sacred to Pan."¹³ No fishing was allowed in the waters of many sanctuaries, and in some was lawful only for priests. Even eels were sacred in Arethusa.

It would be overstating the case to indicate that precincts were always kept inviolate — no laws would have been necessary if they had been — or that conservation was invariably effective in the hands of the gods. There was an annual Roman festival, the Parilia, in which shepherds were cleansed ritually for trespass in the groves, and Cata records a prayer to be used before cutting down a tree in a sacred grove. Xenophon remarked that men could hire *temene* from the city of Athens, presumably for some kind of commercial use, and Juvenal complained that foreigners rented groves in Rome.

Protection Limited

And what of nature outside the boundaries of the *temene*, where no special protection was afforded? Greek and Latin writers expressed their admiration for nature through the mouths of the Olympian deities. The subject is too vast to expand upon here, but I cannot resist quoting the Homeric *Hymn to Delian Apollo* as one illustration: "All mountain peaks and high headlands of lofty hills and rivers flowing out to the deep and beaches sloping seaward and havens of the sea are your delight."¹⁴ This certainly implies an Olympian approbation of the entire natural world. But the gods in Olympian aspect seem more generally to have functioned so as to set the boundaries between the parts of nature that were sacred and those that were not, to lay down the distinctions between what was permitted to mankind and what was not, and to punish those who transgressed the limits. The result was to leave most of nature without divinely sanctioned protection.

Besides the Olympian gods there were gods of the earth — *chthon* — not the least among whom was Earth herself, great "mother of all,

eldest of all beings, who feeds all creatures."¹⁵ She "not only bears the crops for the husbandman, but also the flocks and herds for pastoral peoples, and even the wild creatures whose abundance is necessary for men at a still earlier stage of culture, who live by hunting and fishing."¹⁶ In the chthonic view, all life is sacred because it comes from Mother Earth, herself the greatest deity, and human beings are simply some among her many creatures, animals more like than unlike other animals. Man goes wrong only by getting out of harmony with nature's ways: her cyclical balance, her movements through growth to fruition. Many gods had chthonic aspects, but chthonic religion was always an undercurrent in Greek and Roman thought, seldom emerging above the surface. Had it been the dominant trend, the environmental history of the classical age would have been different. In actuality, the protection afforded to the natural environment by the gods was limited, circumscribed, and often circumvented, particularly as human minds began to throw off the gods' increasingly tenuous hold.

Philosophical Attitudes

A second set of attitudes we shall consider here is that of the philosophers. A dominant tendency of Greek philosophers and of the Romans who followed in their train was to exclude the gods' actions from their account of nature and also to reify nonhuman nature, setting it apart from mankind as a series of phenomena to be categorized and explained. This approach excluded the participatory sense of identification between human beings and the rest of the natural world which, as noted above, often characterized traditional religious perspectives. But it was not the only posture philosophers could adopt in regard to nature.

I am indebted to John Rodman for an article in which he stressed the importance of another school of philosophers which he calls "a kind of counter-culture," that of Pythagoras and Empedocles, who "exhibited in both theory and practice a deep sense of the kinship of human with nonhuman (especially animal) life."¹⁷ Were these philosophers, these

vegetarians, these almost nature-mystics, the early environmentalists we are looking for? This tradition, often called "Orphic" from its quasi-mythical founder, Orpheus, emphasized the harmony of nature and the unity of all living organisms, including human beings, and thus was fundamentally pantheistic. In the view of Empedocles, the universe was an endless recycling of elements in a kind of closed ecosystem: "There is no birth in mortal things, and no end in ruinous death. There is only mingling and interchange of parts, and it is this we call 'nature.'" ¹⁸ The idea was echoed by Lucretius: "So the sum of things is constantly renewed, all creatures live in symbiosis [*mutua vivunt*];" ¹⁹

Pythagoras

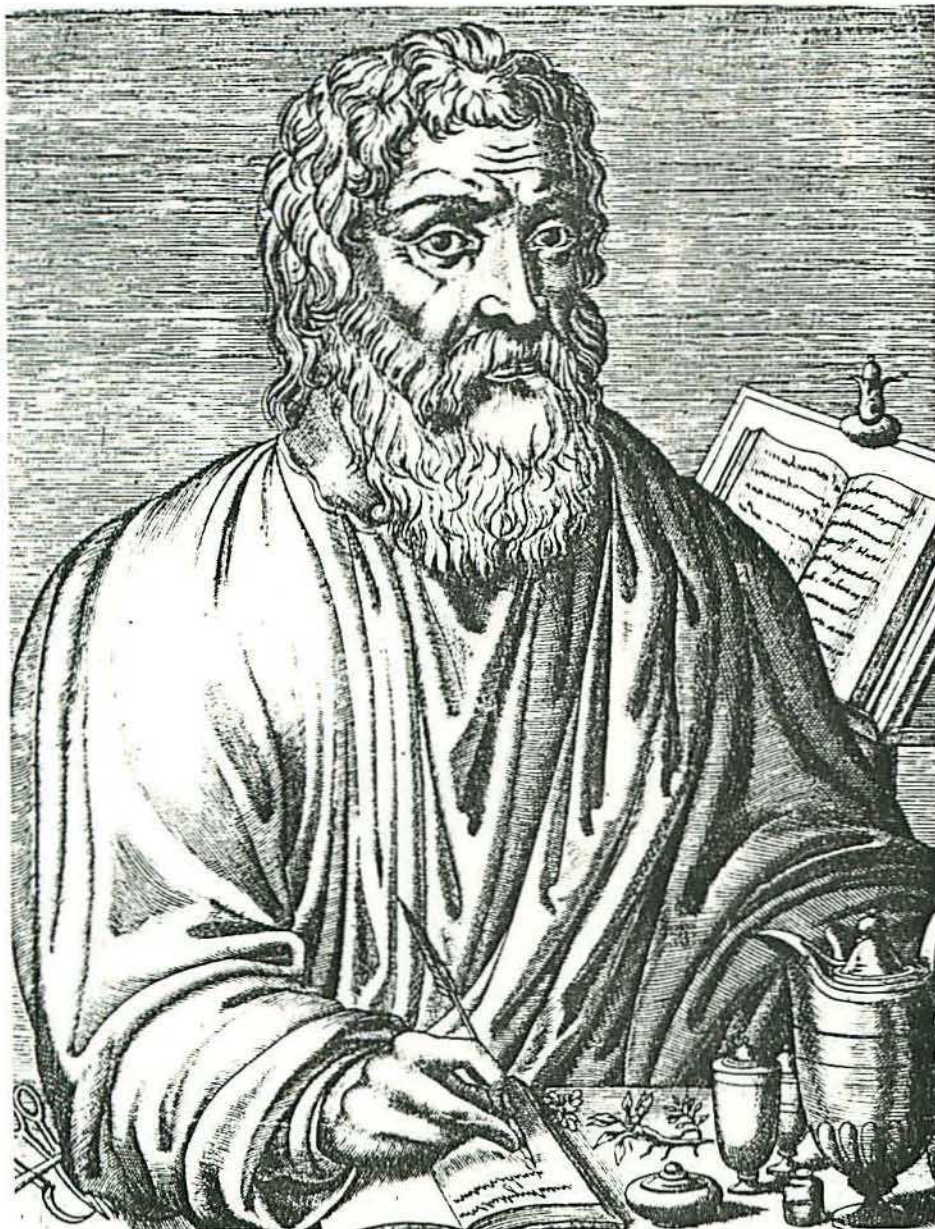
The Orphics and Pythagoreans taught that all living creatures are related and have a common origin and natural ties. The usual iconographic representation of Orpheus shows him surrounded by animals in whom his song has awakened a sympathetic attraction. Pythagoras was

said to have charmed an eagle and a bear.

The sense of kinship is supported by the Orphic doctrine that all living creatures, plants as well as animals, have souls like those of human beings and also a kind of intelligence. As Empedocles said, "The soul inhabits every kind of form of animals and plants." ²⁰ There is no scale of values or hierarchy imposed; all creatures are ensouled and participate in the cyclical development of the world. The result of this view was the practice of kindness to other creatures and the refusal to do them harm. Pythagoras taught respect for life, holding that "to kill living beings is contrary to both custom and nature [*anomon kai para physin*]." ²¹ In the original state of nature, these philosophers held, birds, beasts, and men had been tame and gentle to one another. They urged their followers to abstain from hunting, animal sacrifice, and especially from eating meat. To those who offered animal sacrifice, Empedocles said, "You are sacrificing your own kin." ²² Hunters, butchers, and cooks

were to be shunned as tainted by the shedding of blood. Pythagoras also objected to cutting or damaging trees and to eating some kinds of vegetable foods. Living strictly by Orphic principles would have meant a simple, limited diet, but it would not have been impossible. A number of foods, including some staples of the Mediterranean table, could be obtained without destroying animal or vegetable life; Ovid's "Pythagoras" mentioned apples, grapes, milk, and honey as examples.

Of course, one of the motives adduced by the Orphics against taking lives was that the souls of animals and plants are actually the reincarnated souls of human beings. The story of Pythagoras recognizing his departed friend's voice in the howls of a beaten dog has been told too often. But underlying the dogma can be detected a genuine sympathy for nature's creatures in their own right. Pythagoras' soul, it was said, "was constantly passing into whatever plants or animals it pleased." ²³ And Empedocles reported, "In the past I have been a boy and a girl, a bush, a



Hippocrates believed one must understand nature as a whole to understand the human body.

bird, and a silent water-dwelling fish."²⁴ It was noted above that ancestral hunting societies regarded animals as having spirits; Orphism might be in some of its aspects a modified survival of attitudes from those distant times. Dodds, in *The Greeks and the Irrational*, suggested that the Orphic idea of soul-body dualism might have had its origins in the prehistoric hunter-shaman's experiences of "soul-flight", the soul leaving the body, having various experiences, and returning. Perhaps still another element of the old hunters' tribal culture also found its way into Orphism; that is, respect for nonhuman life and reluctance to kill needlessly.

The Dualist Flaw

The influence of the tradition of

Orpheus, Pythagoras, and Empedocles on environmental thought was, however, not entirely or perhaps even primarily positive, since a salient element was the soul-body dualism mentioned above. The soul was captive in the body, they believed, or in a series of bodies (specifically as a result of the pollution entailed in taking life and eating meat); it was in the soul's best interest to be purified and go free. If this be true, then all bodies, human and nonhuman, are prisons. The world of nature itself must be worse than a prison, indeed, it must be a maze of prisons. Even more seriously, Orphism devalued that portion of the natural environment with which the soul is in closest association, the body itself (as some Pythagoreans put it, *soma* = *sema*, the body is a tomb). The harshness

of this view of the body is mitigated elsewhere, as in Empedocles' statement that "mortals can know and recognize" the power of Love in the physical universe, "for she is implanted in their bodies."²⁵ But one's inescapable impression is that the dualism of soul and body promulgated by this school prepared the way for a crushing indifference to the natural world that became characteristic of much later philosophical religious thought that was touched by it. We will leave Pythagoreanism for now but will return later to see one of its more appealing influences.

In our search for early environmentalists, we might well look at a third set of attitudes to be found in those few outstanding Greek thinkers who originated inquiries we would call ecological. They might be said to have been the forerunners of the science of ecology even though, as is the case with much Greek science, interest in pursuing answers to the kind of questions they were asking did not revive until the modern period.

The philosophical basis of ecology, which conceived the world as a biological system within which cycles of change and interaction occur, was stated by Empedocles in the quotation given above, and repeated here somewhat more fully:

There is no birth in mortal things, and no end in ruinous death. There is only mingling and interchange of parts, and it is this we call 'nature' . . . When these elements are mingled into the shape of a man living under the bright sky, or into the shape of wild beasts or plants or birds, men call it birth; and when these things are separated into their parts men speak of hapless death.²⁶

One is reminded also of Anaxagoras' statement, "Nothing exists apart; everything has a share of everything else."²⁷

Hippocrates

Hippocrates investigated the effects of varying natural environments on human health, both physical and mental. He believed that one must understand nature as a whole to understand the human body and soul. According to *Airs, Waters, Places*,²⁸ the climate, seasons, and

winds of a place, the drinking water found there, and the topography and exposure determine to a great extent the physique, temperament, intelligence, and therefore even the culture of the people who live there, along with the characteristic diseases to be expected among them. In addition, he maintained that the same environmental factors affect the growth of domestic and wild animals and plants in each region. Hippocrates' environmental studies were based as far as possible on careful observation of the regions discussed and are not applications a priori of the theory of humors. If ecology is in part the study of how environments affect organisms, then Hippocrates was a pioneer of ecology.

Aristotle

Aristotle, whose "philosophical emphasis is clearly the natural world" and whose "starting point . . . was biology and the notion of organismic development and function,"²⁹ was interested not only in individual organisms but also in the relationship among living things and between them and the physical environment. In the *Metaphysics*, he said, "All things are ordered together somehow, but not all alike — both fishes and fowls and plants; and the world is not such that one thing has nothing to do with another, but they are connected."³⁰ This principle clearly makes the study of ecology possible, and Aristotle's own observations on ecological relationships, contained in his biological writings, were so intelligent that he has been given credit for introducing "ecologic considerations into scientific literature," and called the "Father of Animal Ecology."³¹

In the *Historia Animalium*, he notes carefully the preferences of various species in food and competition for food "between such animals as dwell in the same localities or subsist on the same food,"³² particularly when supplies run short. The lion and civet will compete for meat, and the kite will steal food from the raven. "Thus we see in the creatures above mentioned their mutual friendship or enmity is due to the food they feed on and the life they lead."³³

Modern ecologists have explained fluctuations of animal populations

as resulting from interactions between availability of food, rapidity of reproduction, and predation. Aristotle gave a classic description of a spectacular population increase among mice and subsequent population "crash" in which he noted all the important factors (although he did not attain the complex explanation that would now be regarded as satisfactory). At the beginning of the passage, he described what might be called an experiment in population ecology. A female mouse "in a state of pregnancy was shut up by acci-

**"To kill living things is
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and nature."**

Pythagoras.

dent in a vessel containing millet-seed, and after a little while the lid of the vessel was removed and upwards of 120 mice were found inside it."³⁴ He went on to describe a plague of mice that appeared suddenly, devouring a whole crop. The predators, namely pigs, foxes, and ferrets, were active but ineffective in thinning the numbers, until a rapid disappearance of the mice "after heavy rains."

Other ecological relationships described by Aristotle include territoriality among mammals and birds and animal behaviour such as competition and dominance within species, migration, and hibernation. Symbiosis, including parasitism and commensalism, is discussed by means of several examples including the noted one of the sea creature called the pinna and a small crab, the "pinna-guard." "If the pinna be deprived of this pinna-guard," he said, "it soon dies."³⁵

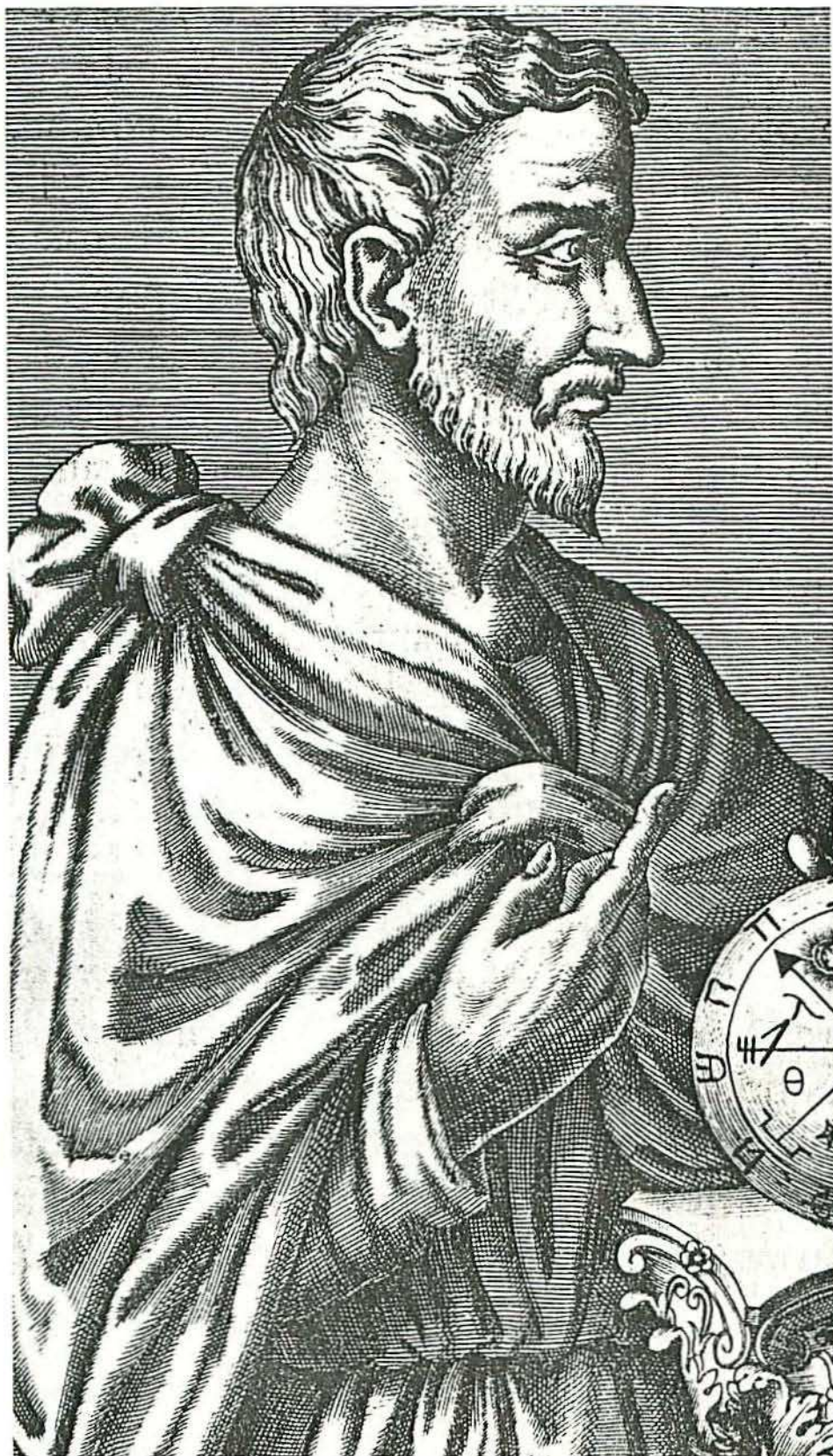
Nature's Hierarchy

Aristotle's systematic view of nature, however, falls short of being ecological in the scientific sense. His scheme is hierarchical and pyramidal. Although each level of nature intergrades into the next so that sharp distinctions between classes are difficult, for example, "in most of the

other animals can be discerned traces of the psychical modes which attain their clearest differentiation in man."³⁶ still "there is one ultimate ruler, and each lower level is subordinate to the next higher level, as in an army."³⁷ Anthony Preus, in a very useful discussion of Aristotle's biological writings, uses a political analogy, calling Aristotle's ecology "aristocratic." As Preus points out, Aristotle in the *Politics* "argues not only for natural slavery but also that plants exist 'for the sake of' animals, and animals exist 'for the sake of' man."³⁸ But scientific ecology sees nature as a reticulum, a web or net of complex inter-relationships that are neither hierarchical, pyramidal, nor aristocratic. Scientific ecology sees the existence of each species as depending upon and supporting a series of inter-actions with other species and non-living components of the environment. In such a view, questions as to whether one species is "more valuable" than another can only be answered in terms relative to a particular problem chosen for study.³⁹ Any system that imposes a structure of values a priori will inevitably distort the network of relationships discovered and described by scientific ecology. Aristotle's ecology is therefore unscientific insofar as it is "aristocratic," whether its apex value is man or something beyond man.

A More Democratic View

Theophrastus, the student of Aristotle who extended his teacher's researches into botany, adopted an ecological model that was more "democratic" than Aristotle's. When Theophrastus looked for the purport (*telos*) of a plant, he found it in the production of seeds for the perpetuation of the same species, not in producing food for animals or man. He was interested in efficient causes, not in final causes, and thus much closer to the spirit of modern science. As he expressed it in his *Metaphysics*, "We must try to find a certain limit . . . both to 'final causation' and to the 'impulse to the better.'" "For this is the beginning of the inquiry about the universe, that is, of the effort to determine 'the conditions on which real things depend and the relations in which they stand to one another.'"⁴⁰ Since he was also a careful observer of nature,



Pythagoras. His followers split into two schools; a 'scientific' school that neglected biology and therefore ecology, a 'religious' school that emphasized purity of soul and rejected any concern with physical nature. The more 'environmentalist' of his teachings were gradually abandoned as the Pythagoreans accommodated themselves to the general attitude of Greco-Roman culture. The objections to animal sacrifice, and to most plants as food, were dropped. The divorce of body and soul in later Pythagorean thought, wherever its influence was strong, brought with it indifference not only to the body but to all the rest of the natural environment. (See: Hughes, *The Environmental Ethics of the Pythagoreans*, *Environmental Ethics*, Fall 1980, for further discussion of the Pythagoreans.)

he was able to provide ecological explanations of many natural phenomena.

He stressed the importance of observing plants both in undisturbed ecosystems (since where a plant grows unaided best reveals the environment to which it is best adapted) and under cultivation (which he holds to be an environmental change that operates in fundamentally natural ways). He speculated on the interplay between the "tendency of the plant's nature" (which would today be called "genotype") and the environment, giving importance to both.

We would call much of Theophrastus' writings a botanical *Airs, Waters, Places*, if by that we mean that he considers these environmental factors and do not impute to him quite as ardent a belief in environmental determinism as Hippocrates expressed. Theophrastus noted the influences of long-term climate, the growing season, and short-term changes in the weather, including temperature, wind, and rain, on the distribution and growth habits of plants. He observed the effects of changes in climate brought about by changes in the size and location of bodies of water due to natural or human agency. He distinguished among plants adapted to conditions of aridity (xerophytes), moisture (hydrophytes), and salinity (halophytes), and to various types of soil. He provided extensive discussion of the effects of slope, exposure to wind and sun, and elevation on environmental conditions in small areas (microclimates) and the plants that grow in them, and he noted correctly that mountains provide an unusual variety of these. He saw that plants of limited distribution (narrow endemics) can be associated with particular mountains or isolated marshes.

Theophrastus used certain classifying terms that are still important to ecologists; for example, he distinguished among trees, shrubs, and undershrubs. He knew that plants compete with each other for food, water, and sunlight, and he distinguished between shade-tolerant and shade-intolerant trees. He described the spread of weeds and cases of symbiosis and parasitism. He understood that legumes enrich the soil

and that decomposing leaves can provide a seedbed.

The interaction between animals and plants, through grazing and other means, received his attention. Insects, he pointed out, are often species-specific or limited to certain regions, and some plants have odours that repel them. Cultivation and other human interactions with plants form a major theme. He knew that human beings affect plants in positive and negative ways, on the one hand through manuring and other forms of tendance and on the other hand through burning, cutting, and even the trampling of armies. He recorded regulations governing the harvest of wild plants and the felling of trees and had heard that the cedars of Lebanon grew to great size where they were protected in 'paradises' under Persian supervision.

Since, as noted above, Aristotle has been called the 'Father of Animal Ecology,' it might be plausible to distinguish Theophrastus as 'Father of Plant Ecology.' But while Aristotle provided us with a few outstanding descriptions and insights, Theophrastus adopted a consistent ecological viewpoint supported by observations of greater extent, variety, and importance. His philosophical stance is more congenial to ecological discoveries. Theophrastus is clearly the most important early ecologist.

Few Disciples

Unfortunately, these Greek forerunners of scientific ecology had few followers. No ancient thinkers expanded on their ecological contributions, and they cannot be shown to have had any effect on practice. In medieval times, Theophrastus was known only as the author of the satirical *Characters*, and Aristotle's biological writings were generally ignored in favour of the *Politics* and *Ethics*.

Ecological Protests

Fourth and last, let us consider the attitudes of those who might loosely be called the ancient world's environmental protest movement. There were a number of Greek and Roman writers who recognized some environmental problems caused by human beings. A few of them went so far as to speak out against the practices that caused the problems

and to advocate their elimination.

Vitruvius, the Roman architect, was aware of water pollution caused by mining and the resulting danger to health. He advised methods of testing water for purity and particularly warned against lead pipes as a source of contamination harmful to the human body. He also described lead poisoning caused by industrial air pollution: "We can take example by the workers in lead who have complexions affected by pallor. For when, in casting, the lead receives the current of air, the fumes from it occupy the members of the body,

"All things are ordered together . . . and the world is not such that one thing has nothing to do with another, but they are connected."

Aristotle.

and burning them thereupon, rob the limbs of the virtue of the blood."⁴¹ He further suggested a method of testing air in mines for dangerous pollutants.

Strabo, the geographer, also observed industrial air pollution. In Iberia, he noted, "They build their silver-smelting furnaces with high chimneys, so that the gas from the ore may be carried high into the air, for it is heavy and deadly."⁴²

Soil erosion due to deforestation was described by Plato in a noted passage in the *Critias*. That the soil had become increasingly exhausted since earlier, better days was a commonplace among Greek and Roman agricultural writers. Lucretius and others believed this was inevitable, as Mother Earth was growing old, but more practical farmers, such as Xenophon and Columella blamed the neglect of careless human beings: "Land, as all men know, responds to good treatment."⁴³ Horace scorned "the owner contemptuous of the land."⁴⁴ The major role of goats in destroying trees and other vegetation was noted by Varro.

But the urban environment received the most graphic criticism, at least during the Roman period. "The smoke, the wealth, the noise of Rome,"⁴⁵ repelled Horace, who also objected to the city's suburban encroachment on fertile farmlands. Martial catalogued the many sources of sleep-preventing noise pollution in Rome, including traffic, hammers, and loud schoolteachers. Juvenal expanded the list of urban ills, decrying traffic congestion, fires, public works projects that destroyed natural beauty, chamber pots emptied out of upper storey windows, and ever increasing crime and vandalism. Seneca joined him in criticizing the "towering tenements, so dangerous to the persons who dwell in them"⁴⁶ through imminent collapse.

The polarity between city and country provided a major theme in Greek and Latin literature, and the comparison was almost always favourable to the country. From Theocritus on, writers glorified pastoral and bucolic life as closer to nature and therefore to be preferred. Dio Chrysostom devoted his *Euboean Discourse* to a demonstration of the moral superiority of a hunter's clan to town dwellers. Those who shared such a view of the urban and rural environments might well be expected to "protest with their feet" by leaving the city and to advise others to do the same. Horace, Martial, Juvenal, and others did just that, in the firm conviction that in so doing they were not simply shunning human society (as Heraclitus and Menander's title character in the *Dyscolus* had done by retiring into the mountains) but were enabling themselves to choose their company more wisely and giving themselves enough living space to recover their essential humanity. "There's no place in the city for a poor man to get a little peace and a chance to talk."⁴⁷

Survival of Pythagorean Views

Another line of protest represented the survival of some of the Pythagorean ideas discussed above. Maintaining the sanctity of all life and the possession of rational souls by animals, some writers in the Roman period objected to hunting, a meat diet, animal sacrifice, and the slaughters for public entertainment in the arenas. Pythagoras himself

was given a voice in Ovid's *Metamorphoses*, where he advised King Numa against animal food, since it is through eating the flesh of living creatures that the Golden Age came to an end, and against animal sacrifice as making the very gods the partners of men in wickedness.

Plutarch also voice Pythagorean protest. In his dialogue, *Whether Land or Sea Animals are Cleverer*, ostensibly a learned debate among cultured huntsmen, Plutarch actually argues that animals possess reason to support his contention. He admits that animals have only a degree of reason but notes that this is also true of human beings. If what we want is "true reason and wisdom, not even man may be said to exercise it."⁴⁸ But if animals are rational, then we are unjust to kill them when they have not injured us. Plutarch is not fully a Pythagorean; he denies plants souls, and elsewhere he would permit killing animals "in pity and sorrow,"⁴⁹ as well as eating meat as an unfortunate necessity.

But Plutarch's most delightful

word on the subject is a brief dialogue between Odysseus, Gryllus, and Circe. Circe, the witch, had changed many men into beasts of various kinds. Odysseus won the right to have his own sailors re-transformed and then asked Circe to release the other Greeks from their animal forms. Circe agreed on one condition: that Odysseus convince a spokesman for the beasts to return willingly to human form. The one chosen to speak for the animals was Gryllus, a hog granted the power of speech by Circe. Gryllus refused the chance to return to human form, since animals, he maintained, are superior to mankind in every virtue; courage, temperance, and intelligence. Moreover, animal virtues are natural; humans must cultivate theirs. Odysseus, the famous persuasive arguer, lost the contest. Having maintained that beasts cannot be rational if they have no in-born knowledge of God, he was reminded by Gryllus that his own father was Sisyphus, a famous atheist. That Plutarch's clever dia-

logue was not just a set piece is evident from his serious objections voiced elsewhere to hunting, animal slaughter, and the excesses of the Roman arena. Plutarch, rejecting the argument of Hesiod and the Stoics that "human beings have no compact of justice with irrational animals,"⁵⁰ exhibited admiration and sympathy for the myriad forms of living things and was an early defender of animal rights.⁵¹

In society today, we can identify groups and individuals whose ideas and efforts are analogous to the sets of attitudes here studied. It is a sobering observation that none of the Greeks and Romans we have mentioned, whether the approaches they adopted were religious, philosophical, scientific, or literary, were markedly successful in preventing the environmental deterioration of the Mediterranean basin in classical times.

Footnote: Reprinted with permission from *Historical Ecology*, ed. Lester J. Bilskey, Kennikat Press, Port Washington, New York, 1980.

References:

1. Plutarch, *Alexander* 64.2.
2. Theocritus 4.43, quoted in W.K.C. Guthrie, *The Greeks and Their Gods* (Boston, 1954), p.38.
3. Homeric *Hymn to Aphrodite* 5.3-5.
4. Euripides, *Alcestis* 578 ff.
5. Homeric *Hymn to Pan* 19.5-11.
6. Catullus 34.9 ff.
7. Sophocles, *Electra* 563-72.
8. Guthrie, p.100.
9. Aeschylus, *Agamemnon* 135-43.
10. Xenophon, *Cynegeticus* 5.14. Another survival from hunting and gathering societies may be seen in the offerings of fruit and meal-cakes left by Greek rhizotomists to "pay" for certain herbs (Theophrastus, *Historia Plantarum* 9.8.7). American Indian medicine men and women had similar rituals.
11. Kenneth Clark, "Animals and Men: Love, Admiration, and Outright War," *Smithsonian*, 8 (September 1977); 55.
12. Pliny, *Natural History* 13.3.
13. Pausanias 8.54.5.
14. Homeric *Hymn to Delian Apollo* 3.22-24.
15. Homeric *Hymn to Earth the Mother of All* 30.1-4.
16. Guthrie, p.58.
17. John Rodman, "The Other Side of Ecology in Ancient Greece: Comments on Hughes," *Inquiry*, 19 (Spring 1976); 108-12.
18. Empedocles, fragment 8.
19. Lucretius, *De Rerum Natura* 2.75-79.
20. Diogenes Laertius, *Life of Empedocles* 12.
21. Iamblichus, *Life of Pythagoras* 186.
22. Empedocles, fragment 117.
23. Diogenes Laertius, *Life of Pythagoras* 8.4.
24. Empedocles, fragment 137.
25. Empedocles, fragment 17.
26. Empedocles, fragments 8-9, translated in Philip Wheelwright, *The Presocratics* (New York, 1966), p.127.
27. Anaxagoras, fragment 6.
28. Here I have ignored the question of authorship, simply postulating my "Hippocrates" as the author of this one work.
29. These quotations are from George Sessions, "Spinoza and Jeffers: An Environmental Perspective," *Inquiry*, 20 (1977), 481-528.
30. Aristotle, *Metaphysics* 12.10.2 (107a 17-20).
31. George Sarton, *A History of Science: Ancient Science Through the Golden Age of Greece* (Cambridge, Mass., 1952), p.565; Friedrich S. Bodenheimer, "Aristotle, the Father of Animal Ecology," *Homenaje a Millas-Valliciosa* (Barcelona, 1954), pp. 165-81.
32. Aristotle, *Historia Animalium* 9. 1 (609b 19-25).
33. *Ibid.* (610a 34-35).
34. *Ibid.* 6.36 (508b 10-29).
35. *Ibid.* 5.15 (547b 15-32).
36. *Ibid.* 8.1 (588a 13-b17); see also *De Partibus Animalium* 4.5 (681a 12 ff).
37. Anthony Preus, *Science and Philosophy in Aristotle's Biological Works* (Hildesheim, 1975), p. 217.
38. *Ibid.*, Aristotle, *Politics* 1.5 (1254b 18-19), (1256b 15-26).
39. Preus attributes to "some modern scientists" belief in a "democratic" theory of ecology "which supposes that all living things have an intrinsic value which is absolute, that the value, merit, or worth of any living thing is to be regarded as intrinsically equal to that of any other; living things are not arranged in a scale of value" (p. 324, n. 48). Neither the "aristocratic" or "democratic" theory is scientific; they are philosophical models which might, perhaps, serve as guides for human technology. But the pure structure of the democratic model is more similar to the reticulum disclosed by scientific ecology and seems, therefore, better to reflect reality.
40. Theophrastus, *Metaphysics* 9.32-34, quoted in Clarence J. Glacken, *Traces on the Rhodian Shore* (Berkeley, 1967), p. 51. I am indebted to Glacken for his exegesis of Theophrastus.
41. Vitruvius, *De Architectura* 8.6.11; see also 8.3.5, 8.4.1-2, 8.6.10-13.
42. Strabo, *Geography* 3.2.8 (c. 147).
43. Xenophon, *Oeconomicus* 2.10-15. See Columella, *De Re Rustica* 1. pref. 1-3.
44. Horace, *Carmina* 3.1.36-37.
45. *Ibid.* 3.29.12.
46. Seneca, *Epistulae Morales* 90.7-13.
47. *Martial* 12.57.4-6.
48. Plutarch, *Moralia* 962-D.
49. *Ibid.* 996F.
50. *Ibid.* 999A, referring to Hesiod, *Works and Days*, 277-79.
51. But Plutarch could be conventional; see his *Life of Pericles*, 1. For a review of recent writings on animal rights, see John Rodman, "The Liberation of Nature?" *Inquiry*, 20 (Spring 1977); 83, 131.