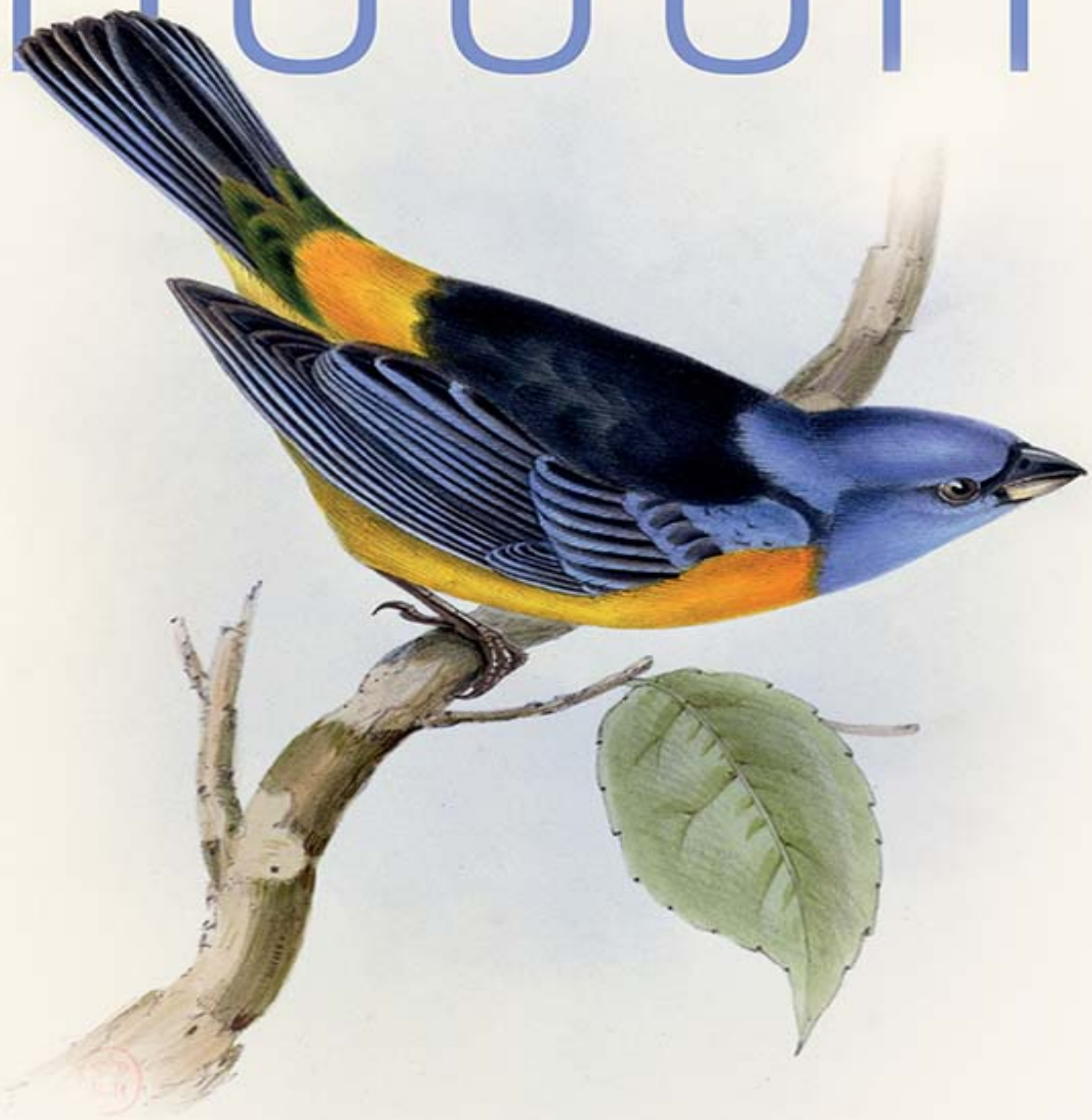
ENVIRONMENTAL THOUGHT



A Short History

ROBIN ATTFIELD

CONTENTS

Environmental Thought

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Introduction

Environmental thought concerns reflections on nature, and related attitudes and intuitions. The vulnerability of natural systems to human destructiveness came to full awareness only in the nineteenth century, with the publication of George Perkins Marsh's *Man and Nature* (1965 [1864]), and in the wake of the publication (in 1859) of Charles Darwin's theory of evolution by natural selection, although some limited grasp of the impact of human interventions dates back to Theophrastus (371–287 BCE), one of Aristotle's followers, in the ancient world (Glacken 1967: 129–30; see also Chapter 1), and to John Evelyn in the early modern period (Glacken 1967: 485–91; see also Chapter 2). Yet it took until the disclosures of Rachel Carson (1962) about emissions of DDT in Europe reaching the flesh of Antarctic penguins (see Chapter 6) for the urgency of redressing the impacts of human interventions to be taken seriously.

There have been many different conceptions of nature across the centuries. For some, nature is everything that is not supernatural, and in this sense humanity is generally regarded as part of nature. For others, the natural is everything that is not (or largely not) the result of human artifice or intervention, and in this sense humanity is often regarded as distinct from nature, since most people are formed by human nurturing and education. The parenthetic 'or largely not' is important, for the regions of Earth unaffected by humanity are diminishingly slight, and in some views nonexistent. Yet whole tracts are *largely* unaffected, and it is these tracts and their living inhabitants that are most often meant when people speak of 'nature'.

There is, of course, another sense of nature, where a thing's nature is its character or composition, as in the expression 'the nature of the beast'. This is why it even makes sense to talk about 'the nature of nature'. But that is not the sense of nature intended in this book, except where the context indicates otherwise. However, some people have regarded nature as an autonomous force, with laws (and in some views even purposes) of its own, and this sense survives into the present, as when Barry Commoner (1972) presented as one of his laws of ecology the suggested law that 'Nature knows best' (see Chapter 7). Aspects of this conception will be used here to the extent that there are laws of nature to which human beings – as well as everything else in creation – are subject, but the suggestion that nature is an autonomous force should not in my view be credited, let alone the view that it has knowledge or a will of its own. The related Gaia theory of James Lovelock (1979), according to which the Earth is a self-regulating system or superorganism, will also be discussed and sifted (see Chapter 8).

The recentness of the discovery that human action is affecting and sometimes undermining ecosystems worldwide may suggest that there is little to learn from pre-modern or early modern environmental thought. But here we should heed the warning of George Santayana (1863–1952): 'Those who do not remember the past are condemned to repeat it.' More positively, John Passmore has brought to light some environmentally promising stances which he finds in ancient literature, for one of which humanity is nature's steward, answerable (whether to God or to posterity) for its care, and another for which the role of humanity is to complete, adorn or perfect nature, regarded as an incomplete creation (1974: 28–40). While Passmore claimed that these were minority stances that disappeared from view until the modern period, there

is evidence that there was a continuity among their adherents across the Christian centuries, and that these approaches were in due course adopted by Jews and Muslims as well. Passmore considered these stances important as being seeds within the Western tradition on which contemporary environmentalism could be built; if he was right to this extent, then these ancient stances have great contemporary importance.

This suggestion, however, gives rise to a debate concerning whether ideas and thought are capable of exercising influence on the course of history as opposed to economic and related social factors. Many Marxists and others have regarded economic forces as the motors of history, and ideas as mere epiphenomena or by-products, with little or no influence of their own. It is not necessary to be a determinist to hold this, for economic factors could predispose people both to beliefs and forms of behaviour which they could have resisted but have lacked the determination to reject. Others, however, have held opposed positions, maintaining either that ideas are what shape the future more than anything else, or, more moderately, that beliefs, ideas and cultural factors exercise some degree of influence alongside economic forces and social and technological trends.

My own inclination coheres with this more moderate stance, evidence for which may be found in whichever passages in this book concerning thinking of the past ring bells with readers and stimulate environmental concern. (In particular, one cogent example, discussed in Chapter 1, is the influence of Plato's *Timaeus* on centuries of subsequent thought, while an even clearer case may be found in the passage of Chapter 4 concerning the influence of the ideas of Henry David Thoreau and George Perkins Marsh on the inauguration of the Yellowstone National Park by President Ulysses Grant in 1872.) And if this more moderate stance is

credible, then (for example) the ancient traditions of Passmore's account remain worth considering, even if his account is open to qualification in detail. There again, other ancient and environmentally sensitive traditional schools of thought, such as Daoism, should not be forgotten, but taken into account when the prospects for contemporary environmentalism are being considered. If the West needs to build on its own ancient traditions, so does China, and so too does (for example) the world of Islam. Accordingly, some longstanding Daoist traditions will receive mention in Chapter 1, and, likewise, consideration will be given to some longstanding Islamic themes. Yet in the modern 'global village', historical attitudes of past centuries are the history of humanity as a whole, and none of these traditions can be regarded as irrelevant to any of us, however emancipated we may claim to be from the social constraints and narrow nationalisms of the past.

This granted, the scope of this book is perforce broader than that of ecological science and its origins, important as this science has been to environmental awareness. So, for example, I have not followed Frank N. Egerton in omitting the Bible and early Christianity as neglectful of science (2012: 17), in view of their profound environmental teachings, presuppositions and influence. Nor have I omitted the divergent stances of Reformers such as Luther and Calvin, together with their long-term impacts. At the same time, I have attempted to bring onto the stage significant literary and artistic works, from Hesiod and Virgil to Traherne, Wordsworth, Turner and Gerard Manley Hopkins.

But the major drawback of this inclusiveness of scope has perforce been the omission of much of the detail covered by authors with more specialist concerns (and with more space to deploy). Thus I have had to omit mention of many medieval Muslim scholars (while acknowledging the

contribution of this period of Islam), and the many Renaissance scholars who revived the study of ancient botanists and zoologists, including their fascinating dispute of around 1500 about the vulnerability of Pliny and other ancient authorities to error (Egerton 2012: 33). My brief was in any case to focus largely on Darwin and the subsequent period, and that has required selectivity with respect to much of the detail of the preceding ages, including even the detail of the biological science of the modern world prior to Darwin. Readers intent on accessing this phase of the history of the science of biology are advised to read Egerton.

Similarly, this book does not seek to cover the scientific revolution of the early modern period, or its technocratic late modern counterpart, despite its discussion of the central advocates of mechanism in Chapter 2, and of Darwin and his successors in Chapter 3. A penetrating investigation into these aspects of the history of science can be found in Pepper (1984). There again, this book does not seek to depict in any detail the history of either landscape gardening in England or the related enclosure movement (except for the related protests of the poet John Clare: see Chapter 2). Readers wishing to study these movements are recommended to consult Coates (1998). Likewise, more detail is to be found about American environmentalists of the nineteenth century in the books of Nash (2014 [1967]; 1989) than in this one, although Chapter 4 presents the developing ideas both of the American Transcendentalists (including Marsh) and of the controversy about preservation between John Muir and Gifford Pinchot. There again, there is ampler detail to be found in Worster (1985 [1977]) about the origins and rise of ecological science, topics which the fifth chapter of this book re-examines with the aid of more contemporary sources.

Darwin and Darwinism are discussed in Chapter 3, with emphasis on Darwin's own understanding of the ecological implications of his theory. Chapter 4 considers 'The American Debate', focusing on the writings and influence of Marsh and of John Muir, and the controversies about National Parks. Chapter 5 concerns the origins and development of the science of ecology on both sides of the Atlantic.

In Chapter 6, further sources of conservation are studied, including the poet Gerard Manley Hopkins, the forester and ecologist Aldo Leopold and the biologist Rachel Carson, whose *Silent Spring* (published 1962) ignited the ecological movement. Chapter 7 introduces a range of contributions to early environmentalism movements, from *Blueprint for Survival* (1972) to *Our Common Future* (1987). In Chapter 8, we encounter the pioneers and main schools of environmental philosophy; this discussion is continued in Chapter 9, where further schools are introduced, together with ecological issues and movements, including the Green movement. Chapter 10 presents the global environmental crisis of the twenty-first century, and the Conclusion brings together historical strands that have contributed to contemporary environmental thought and allow the crisis to be addressed.

The above-mentioned debate about the influence of beliefs and ideas can be illustrated by the discourse surrounding the thesis put forward by Lynn White Jr. in an article in *Science* in 1967. White maintained that the roots of our ecological (his word was 'ecologic') crisis lie in Judaeo-Christian theology, which makes Christianity, particularly in its Western version, 'the most anthropocentric religion the world has seen'. White's specialism was medieval technology, and he regarded the distinctive technological advances of Western Christendom during the Middle Ages as manifesting an aggressive form of belief in the human

domination of nature. His thesis will be discussed more than once (in Chapters 1, 8 and 9), because of its interpretation of Christianity, as well as of the Middle Ages, and detailed discussion can be left for the relevant sections. However, it is worth remarking that among the many criticisms to which his stance has been subjected, no fewer than two forms of misguided determinism have been ascribed to him.

For example, in a review in *Past and Present*, R. H. Hilton and P. H. Sawyer (1963: 97) accused him of 'technological determinism', the suggestion that the shape of history and the structure of society were determined by technological innovations such as the new form of heavy ploughing of the early Middle Ages (on which White made human attitudes and behaviour towards nature turn), or later innovations such as clockwork and gunpowder. This approach clearly has its limits, since technology is itself heavily influenced both by economic factors and trends and sometimes by cultural factors (and even possibly ideas). There is a case for ascribing the intensity of some modern ecological problems to contemporary technology (carbon-based energy generation and the manufacture of plastics being leading examples), but once again the forces that drive this technology must also be taken into account.

However, this criticism of White is not consistent with another form of determinism often ascribed to him, the view that the roots of our problems lie in religious beliefs, and that their solution correspondingly lies in a change of religious beliefs, such as either the adoption of Zen Buddhism or reversion to the kind of Christianity advanced by St Francis of Assisi. Certainly, the suggestion that religious beliefs drive history to such a profound extent is implausible, particularly if the claim is that the conversion of the West (of Northern Europe) to Christianity in the centuries around 700 CE is what drove the industrial

revolution of over a millennium later, or the subsequent industrial revolutions of the twentieth and twenty-first centuries. Critics have rightly commented that religious beliefs have often formed a rationalization of trends that were taking place already, themselves to be otherwise explained. Thus, even if White's theory is held in a nondeterministic form, it can be criticized for exaggerating the formative influence of religious beliefs.

Yet the possibility remains that such beliefs are capable of making a difference, alongside many other factors. And this makes it important to consider whether, as many others have claimed, White mischaracterizes both Christianity and also characteristic medieval attitudes to nature. It also makes it important to consider religious stances like the stewardship approach, as identified by Passmore, since approaches of this kind may also make a difference, this time in the direction of motivating environmental concern. While there are undoubtedly other sources of environmental concern, such as recognition of the full implications of Darwinism, and of the ordered but vulnerable character of global ecological systems, attitudes such as these remain significant sources of potential motivation.

But so does simple love of nature and natural beauty. This can be acquired from direct experience (for example, through hiking, boating and field-trips), from films and television programmes, through appreciation of art, and by retrieving the love of nature and landscape found in ancient thinkers such as Virgil and the author of the *Song of Solomon*, in patristic writers such as Basil the Great, in early modern poets such as Thomas Traherne and in modern thinkers such as Rachel Carson. Historical environmental thought, then, can influence contemporary agents not only through its teachings about ethical responsibilities, but also through renewing the jaded vision

of the dwellers of modern cities, and opening or reopening our eyes and ears to the colours, sounds and variety of the world around us.

I would like to express thanks to my Cardiff colleague, Dr Hefin Jones, for checking an early draft of part of Chapter 5, to two anonymous referees for looking over Chapters 3 and 5 respectively, and to two others for reviewing a draft of all ten chapters. I am grateful to my colleagues at the Cardiff University Institute for Sustainable Places for inviting me to give a presentation there on ‘Myths about Darwin and Marsh’ (based on relevant sections of Chapters 3 and 4) and for their participation in that seminar, and to Steven Goundrey for much-needed technical assistance. Thanks are also due to Pascal Porcheron and Ellen MacDonald-Kramer of Polity Press for their longsuffering and constant helpfulness. Above all, I am particularly grateful to my wife, Leela Dutt Attfield, for encouragement, love and support throughout, and also for daily companionship as we shared together the COVID-19 lockdown during which the later stages of this book were completed. Without her, this book would not even be a dead letter; it would not exist.

Recommended reading

Carson, Rachel (1962). *Silent Spring*. London: Hamish Hamilton.

Coates, Peter (1998). *Nature: Western Attitudes since Ancient Times*. Berkeley: University of California Press.

Egerton, Frank N. (2012). *Roots of Ecology: Antiquity to Haeckel*. Berkeley: University of California Press.

Marsh, George Perkins (2003 [1864]). *Man and Nature: Or, Physical Geography as Modified by Human Action*, ed. David Lowenthal. Seattle: University of Washington Press.

Nash, Roderick Frazier (2014 [1967]). *Wilderness and the American Mind*, 5th edn. New Haven, CT: Yale University Press.

Nash, Roderick Frazier (1989). *The Rights of Nature: A History of Environmental Ethics*. Madison, WI: University of Wisconsin Press.

Pepper, David (1984). *The Roots of Modern Environmentalism*. London: Routledge.

Worster, Donald (1985 [1977]). *Nature's Economy: A History of Ecological Ideas*. Cambridge: Cambridge University Press.

1
Pre-modern Attitudes and Influences

This chapter concerns attitudes to nature in the period before 1500 CE. With the exception of one allusion to ancient China and one to ancient India, it is concerned with Western cultures, broadly enough interpreted to include the rise of Islam and its spread into much of the Middle East, and beyond that to the lands once conquered by Alexander, such as Iran and Afghanistan. Yet it primarily focuses on the Greeks and the Romans, on the Old and New Testaments, on early Christianity and on Europe in the Middle Ages. For these were the periods and the cultures from which many more recent attitudes have derived, as becomes clear in Chapter 2, which depicts the early modern period of Europe.

While the predominant ancient stance was that humanity can and should be in control of nature, it was from the Greeks, in particular, that we have received, on the one hand, belief in human stewardship of the natural world (a belief to which Christianity later contributed: see Chapter 2), and, on the other, belief in the world as a living being, an ancient theme echoed many centuries later in James Lovelock's theory of Gaia (see Chapter 8). Greeks such as Empedocles and Romans such as Lucretius were among early adherents of speculative versions of the theory of evolution by natural selection, more recently supported with empirical evidence and a different conceptual scheme by Charles Darwin (see Chapter 3); this theory has in turn

fostered a new ecological awareness (see Chapter 4 and onwards).

Thus, while some readers may prefer to turn to the chapters about Darwin and environmental thought in the subsequent period, it may be rewarding to review first the beliefs and theories of the ancient and medieval worlds. These are the focus of the current chapter.

Greeks and Romans

This section concerns the ancient worlds of the Greeks and the Romans – the period from 700 BCE to the Emperor Constantine in the early fourth century CE. (The Homeric poems, which may have attained their current form around 700 BCE, bear many traces of earlier thought and practice, but are not considered here.) The thousand years under consideration nourished beliefs, attitudes and practices of immense diversity, and embodied a large variety of attitudes to nature, the land and the natural environment. No claim is made to anything like comprehensive coverage here. Instead, I have selected certain prominent, significant and contrasting claims and statements, whether in prose or verse, in song, drama or philosophy. (As we shall see, some of these were overlapping categories, with much drama and much philosophy expressed in poetic form.) Some have been selected because of their later influence, whether ultimately misleading, like Empedocles' belief in four basic elements, or far-sighted, like his belief in a kind of natural selection (albeit without any recognizable belief in adaptation). Predominantly, however, ancient writers must be allowed to speak for themselves, and ancient practices, however questionable, to receive attention, if only because they supply the context of related thinking and protests, both contemporary and subsequent.

Hesiod and Virgil

All ancient civilizations were agrarian, observes J. Donald Hughes (1994: 131), and dependent on agriculture and the soil. (Some, however, could remember a nomadic past.) So it is not surprising that the fifth-century BCE tragedian Sophocles wrote of Earth as the greatest of the gods, from whom the other gods were descended (*Antigone*, 338–41; Hughes 1994: 130). There are many other passages of the fifth-century tragedians celebrating the Earth as universal Mother, despite recognition of Zeus as the supreme deity.

Nor is it surprising that one of the earliest surviving poems in the Greek language is the poetic guide to farmers (of several centuries earlier than Sophocles) on how to scratch a living from the soil of Boeotia (central Greece), Hesiod's *Works and Days* (around 700 BCE). Hesiod encourages farmers to plough diligently and thus garner enough of a harvest to survive the winter without needing to beg from neighbours. His world is one of small-scale farming and peasant proprietors, albeit also one where much of the hard work is done by slaves.

Hesiod thus became the father of didactic verse, poetry intended to teach a message. This was accomplished in hexameters, the same rhythm as that of the Homeric poems, the *Iliad* and the *Odyssey*, with their heroic themes. But there is nothing heroic about *Works and Days*; Hesiod is aware of living in an Age of Iron, in which the Earth has greatly degenerated from the golden age when 'the fruitful field bare fruit abundantly and without stint' (*Works and Days*, 117–18, 176–7; Hughes 1994: 130). Such belief in decline, both in nature and in human nature, was widespread in the ancient world, although, as we shall see, there were some significant exceptions.

Nearly seven hundred years later, the Roman poet Virgil (70–19 BCE) wrote another didactic poem to foster

farming, again in hexameters, but this time in Latin, the *Georgics*. Virgil lived in an age of farms both large and small, and of large armies. He was an influential supporter of (and propagandist for) the first Emperor, Augustus, who ruled the Roman world, which extended to almost all the shores of the Mediterranean and half of Europe (but not yet Britain). Virgil's poem is elegantly written and reflects patriotic pride in the beauty of the Italian landscape; it was written as much for poets as for farmers, although some in our own day have attempted to implement his precepts (presented in his final book) for bee-keeping.

As Peter Coates (a historian of attitudes to nature since ancient times) has written, Virgil's poem extols 'the husbandman's self-reliance, celebrating honest, open-air toil as man's … pursuit' (1998: 35), though not, as Coates declares, humanity's original pursuit, as there had been a previous age of plenty, when all needs had been met without effort (an echo of Hesiod's golden age). Virgil explains that Jupiter, the Roman equivalent of Zeus and father of farming, did not want the human path to be easy, but sought to stimulate human skill and effort through introducing a hostile environment, inhabited with dangerous creatures like snakes and wolves, in which humans had to earn their livelihoods (*Georgics* I: 122–46).

Despite exceptions, most ancient writers accepted the rightness of human control of nature. For Virgil, though, human control was limited, and the human relation to the land served as a means of building human character. Yet others adopted a sunnier view of nature than Virgil; thus, in his *Natural History* (77 CE), Pliny the Elder, who wrote about agriculture voluminously (in prose), 'celebrated nature as a storehouse' (Coates 1998: 28), fit for humans to mine, till and domesticate. Sadly (and perhaps ironically), he was killed by the eruption of the volcano Vesuvius in 79 CE.

Hesiod and Virgil represent different ages, the first an age of small-scale agriculture and small Greek states, albeit ones spread around much of the Eastern Mediterranean, and the second an age of large-scale farming and large empires, and with much greater literacy and a much larger city-based reading public. Their shared role of briefing farmers showed that the problems of deriving a living from the land persisted. Yet while with Hesiod the struggle was pursued in bitter earnest, Virgil wrote with greater consciousness of the beauty of landscape, but with little or no sense that preserving it might become a problem. Many centuries later, Virgil became a source of inspiration for the eighteenth-century naturalist Gilbert White of Selborne (see Chapter 2) (Worster 1985 [1977]: 27–8).

Empedocles

It is time for philosophy to enter the story. During the sixth and fifth centuries BCE, philosophy arose among the Greeks of Miletus in Asia Minor, and spread to the Greek colonists of Italy and Sicily. Several wrote tracts on the true or underlying nature of nature. For present purposes, our focus will be on the Sicilian Greek, Empedocles of Acragas (*c.* 490–430 BCE), not because he was the most profound of the Greek philosophers, but because of his unique contributions, centrally relevant to how we should understand nature.

Empedocles was probably a Pythagorean (or follower of Pythagoras), believing in reincarnation, and in the possibility of returning as an animal. This may be why he advocated vegetarianism (Coates 1998: 33), a minority stance in the ancient world, but one followed much later by some of the Neoplatonists. The possibility of humans being transformed into animals was later to be explored by the Roman poet Ovid (43 BCE–17 CE) in his *Metamorphoses* (a work of great influence in the Renaissance period). In

faraway China it was also developed in the late fourth century BCE by Zhuangzi, who imagines a fish being transformed into a giant bird, to the amazement of smaller creatures. Zhuangzi's aim was to show us how different from our own the perspective of the large bird would be, and thus how we can be liberated from our habitual, narrow human perspectives (Hourdequin 2015: 82–3). I am not suggesting any influence from the Pythagoreans of the West to the Daoists of China (or vice versa), or from or to either school to or from the Jains of sixth-century India who also taught respect for all creatures, but rather that all three of these schools of thought can open up the possibility of transcending perspectives focused on human beings alone.

We would, however, be mistaken if (with Hughes) we trace environmentalism back to the ancient Pythagoreans, whose stance was an ascetic, dualistic and ritualistic one, and for whom there is no evidence of belief in the vulnerability of species, conservation or concern for sustainability. Nor (come to that) should we credit the ancient legend that Empedocles died by casting himself into the crater of Mount Etna, despite Matthew Arnold's poem depicting his death in this manner.

Perhaps Empedocles' most original contribution was his theory of the evolution of living creatures by a kind of natural selection. At one stage, he held, all kinds of monstrosities came into being, alongside the ancestors of surviving creatures, but the monsters did not prove viable, and thus the range of species was winnowed down to those that survive today. Aristotle later poured scorn on this theory, although Epicurus (fourth to third centuries BCE) adopted a revised form of it. Much later still, Charles Darwin acknowledged Empedocles as a predecessor for his different but related theory; indeed, Darwin wrote of Empedocles: 'We see here the principle of natural selection

shadowed forth’ (Burrow 1985: 53). Empedocles combined this theory with belief in the kinship of human beings and (other) animals, a belief seldom recaptured until the time of Darwin.

Empedocles also devised the theory that everything is made of the four elements, earth, air, fire and water, his solution to the problem of finding something permanent that underlies change. This theory was enthusiastically adopted by Aristotle, and in consequence was held in high favour until the atomic theory was gradually adopted instead by seventeenth-century scientists. Atomism itself was put forward by Democritus of Abdera (fifth century BCE), and adopted in the later ancient world by Epicurus and his followers; but the authority of Aristotle overshadowed it for two thousand years. The four-element theory could be seen as a false start; but it remained an important contribution to people’s understanding of nature for centuries to come. Understanding historical attitudes to nature cannot be limited to successful theories, as if ancient people were trying to anticipate modern findings; that approach is prone instead to mischaracterize the past, and to underestimate its distinctiveness. Nevertheless, Empedocles’ speculative theory of evolution by natural selection was eventually found to be partially (and almost accidentally) on target by nineteenth- and twentieth-century scientists (see Chapter 3).

Greek medicine: Hippocrates and ‘Airs, Waters, Places’

Hippocrates of Cos (*c*. 460–*c*. 375 BCE) was one of the founders of ancient medicine, and travelled around the islands of the Aegean sea, teaching medical students. For present purposes, his most relevant tract was ‘Airs, Waters, Places’, which seeks to trace the influence of seasons, winds, waters and climates on both human health and

human temperaments and cultures. This tract can be seen as prefiguring the late twentieth-century subject of bio-climatology, and has recently been hailed by Anthony Capon (in an address at Cardiff University) as an ancient anticipation of modern ecological studies.

I am not suggesting that ‘Airs, Waters, Places’ exercised any direct influence on modern bio-climatology. Yet many classically educated writers, such as Alexander von Humboldt (1767–1859), took up the theme of the influence of climate on culture, and could well have derived inspiration from the would-be empirical approach of this tract, while newly introducing data from his own study of the new world; and von Humboldt has almost certainly influenced the development of modern climate science (Rajan 2017: 21–50). Hippocrates’ detailed claims are often less than impressive, such as his assertion that cities exposed to hot winds and with plentiful waters have inhabitants with excessive phlegm, leading to dysentery, fevers, eczema and haemorrhoids (‘Airs, Waters, Places’, III). But his approach was later to open up valuable realms of investigation, such as the study of occupational health, and also that of tropical medicine. And that makes it worth a mention here.

Plato and later Platonism

Most of the philosopher Plato’s writings are in the form of dialogues, and so it is not always easy to discover which participants of a given dialogue Plato (428/427–348/347 BCE) himself supported (not even his central character Socrates). It is clear, however, that his characters appreciated natural beauty (*Phaedrus*, 30b), and that they were aware of some (what we call) environmental problems such as soil erosion and deforestation. Thus at *Critias* 111b–d, he writes about Attica (the region around Athens): ‘There are remaining only the bones of the wasted body, as

they may be called … all the richer and softer parts of the soil having fallen away, and the mere skeleton of the land being left' (Passmore 1974: 175; John Passmore was a leading philosopher and historian of ideas, based in Australia). But it is less clear that he felt any need to take steps to preserve or restore the landscape, since for Plato reality consisted in universal forms (such as justice itself or goodness itself) and not in particular objects or places (Hargrove 1989: 16–26), which are mere shadows of what is real. Besides, none of the Greeks (with the possible exception of Theophrastus, discussed in the next section) were aware of humanly caused environmental problems as such.

However, in Plato's *Phaedrus* the claim is made that 'it is everywhere the responsibility of the animate to look after the inanimate', one of the foundation texts for belief in the human stewardship of nature (*Phaedrus*, 246b; Passmore 1974: 28). Some of the subsequent Platonists, such as Iamblichus, interpreted passages like this to mean that humans were sent to live on Earth by God 'to administer earthly things' and to care for them in God's name (Passmore 1974: 28). Passmore took the view that this approach did not appear in Christian teaching until the seventeenth century (1974: 29–30); some evidence for a different interpretation will be advanced in the section on biblical and Christian attitudes.

But the Platonic dialogue that has proved most influential has been *Timaeus*, with its claim that the world is a living creature (*Timaeus*, 30c), and with Plato's account of its ordering by the Demiurge, or cosmic architect (*Timaeus*, 29a). These themes were later taken up by Renaissance Platonists such as Paracelsus (1493/4–1541) and others, who maintained that the universe was to be viewed 'as a vast organism, everywhere quick and vital, its body, soul and spirit … held tightly together' (Merchant 1990 [1980]:

104; Whitney 2006: 40). They also contributed to the later (widely influential) belief in the balance of nature (Egerton 2012: 3).

These perspectives can also be understood as contributory factors in the eventual development during the twentieth century of holistic environmental theories of the Earth (see Chapter 8), such as the Gaia theory of James Lovelock (1979), the holistic ethic of Aldo Leopold (1966 [1949]), the holistic views of Deep Ecologists (Naess 1973) and those of eco-holists such as J. Baird Callicott. Callicott also sought at one stage to appeal to and reinterpret Plato's ethical holism, in which the good of the whole is what matters, rather than the good or the suffering of the individual, in support of Leopold's 'land ethic' (*Republic*, 462a–d; Callicott 1980), but he later retracted these claims. The goddess Gaia is actually mentioned passingly in Plato's *Timaeus* (Goldin 1997: 198); maybe this was known to the novelist William Golding, who suggested this name to Lovelock to epitomize his theory of the Earth as a self-regulating superorganism.

According to Alfred North Whitehead, 'The safest general characterization of the European philosophical tradition is that it consists of a series of footnotes to Plato' (1979 [1929]: 39). This claim has proved more than controversial, even construed strictly about European philosophy. Yet if someone were to apply it to environmental thought, while their claim could be seen as even more controversial, it would not be obvious that they would be wrong. However, another view is possible: the critical insights and the curiosity of the early Greek philosophers (including Empedocles), of historians such as Herodotus (who discusses the distinctive reproductive capacities of hares), of Hippocrates and of Plato himself, derive much of their importance from their supplying the foundations for the

original studies of Aristotle and Theophrastus, the founders of several disciplines including biology (Egerton 2012: 4).

Aristotle and Theophrastus

Aristotle (384–322 BCE) studied at Athens in Plato's Academy, but set off in new directions, founding biology and spending long periods studying, together with his follower Theophrastus, the creatures of a lagoon on the island of Lesbos. He also founded the study of logic. Eventually he founded his own school, the Lyceum. In place of Plato's theory of forms, for which the highest reality consisted in goodness itself and other such abstractions, Aristotle located reality in observable particulars (an approach much more congenial to most modern environmentalists).

For Aristotle, it is not only human beings who have souls, but other creatures as well; their 'psyche' is what makes them the living creatures that they are. One problem passage (in the *Politics*) claims that all other living creatures exist for the sake of humanity; but Aristotle's usual view is that all living creatures have a good of their own, which should be respected where possible. Aristotle paid detailed attention to the study of animals in his books *Generation of Animals, History of Animals* and *Parts of Animals*, and found some animals to display virtues such as wisdom. (Some of his biological works were translated and studied by medieval Arabic scholars: see Egerton 2012: 20–1.) As he says in *Parts of Animals* in response to students reluctant to participate in such study, '[i]f there is anyone who thinks it is base to study animals, he should have the same thought about himself' (Nussbaum 2006: 348).

Aristotle's tenets that all kinds of living creatures shade into one another, and that all creatures can be ordered in a scale of comparative greatness, have been regarded by

Arthur O. Lovejoy as contributions (in conjunction with others from Plato) to belief in ‘the great chain of being’, adhered to subsequently by the Neoplatonists and widely held across Europe until its rejection by the German Romantic writer von Schelling (Lovejoy 1936). But Aristotle actually rejected key components of this (later prevalent) ‘chain’, such as the principle that all possibilities are fulfilled. Nor probably did he adhere to the view that the implicit goal of everything is human benefit; animals aside, it is implausible that the sun and the stars have such a goal. Some of the Stoics may later have adhered to such an anthropocentric view; but their ideas should not be read back into Aristotle. Aristotle’s own views enjoyed a revival in Europe in the late Middle Ages, having earlier been cherished in such Islamic centres as

Baghdad and Córdoba. But by that time, being an Aristotelian usually meant deferring to his authority, and not, as in his own day, basing theories on empirical fieldwork. (For a more detailed account of Aristotle’s zoology, see Egerton 2012: 4–7.)

As for Theophrastus, who took over the leadership of the Lyceum after Aristotle’s death, he recognized that humanmade change (such as deforestation) can have impacts on the local climate. Theophrastus here departs from Aristotle’s view (expressed in the *Meteorologica*) that the world is permanent and ultimately unchanging. We find here the first glimmering of awareness of the systemic vulnerability of the natural world to human influence. But Theophrastus (despite his impact on Pliny the Elder) did not exercise sufficient influence for such awareness to prevail for over two thousand years; after the first century CE, his ideas seem to have been largely forgotten, despite translations during the sixteenth century (Egerton 2012: 33), at least until the time of von Humboldt (eighteenth