The World's Great Philosophers

Edited by

ROBERT L. ARRINGTON

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Preface

Most of the essays contained in this book were originally published in *A Companion to the Philosophers* (Oxford: Blackwell, 1999). Several have been revised, and three (on Aquinas, Zhu Xi (Chu Hsi), and Kant) are new.

The practice of reflective thought called philosophy has few geographical or temporal boundaries. Almost from the beginning of recorded history, and in almost all cultures and nations, individuals have engaged in thinking about the nature of ultimate reality, the human condition, and basic human values. Such philosophical reflections have a degree of abstraction that sets them apart from more practical, everyday concerns as well as from the enterprise we now call science. Philosophical issues are more fundamental, dealing not with individual or generalized facts but with core concepts, essential categories of being and knowledge, basic presuppositions, and ultimate moral and social principles. The line separating philosophy and religion is more difficult to draw, since philosophers and religious thinkers often address similar concerns, and the relationship between the two disciplines is seen differently in divergent philosophical traditions. Indeed, the nature of philosophy itself is a philosophical issue and a matter of dispute, and conceptions of philosophy vary with the schools of thought that embody them.

The goal of this book is to present the thoughts and theories of the truly major philosophers of the world throughout human history. Most of the essays are on "Western" thinkers, which label encompasses European, American, and other English-speaking philosophers. But the rich history of "Eastern" philosophical thought in India and China is also well represented. Inevitably such an project as this can only proceed selectively, and an editorial task that must be faced at the beginning is to choose figures that loom large in the editor's view of philosophy. Obviously, not everyone will agree with this selection. Disagreement may be

particularly evident with respect to recent and contemporary thinkers. It is difficult to assess the long-term stature of philosophers who are currently active or were only recently so, but the criterion of selection operating here has been the level of interest shown in their work and the originality of their thought.

I hope these essays will provide stimulating reading for those who sample them. They are written at a level that is appropriate for a reader who is approaching these figures for the first time. But some philosophy is difficult, and although an effort has been made to keep technical terminology and mind-boggling argumentation to a minimum, some of the essays will stretch the minds of many readers. Stretching the mind, however, is a major part of what philosophy is supposed to do – the results, one hopes, are deeper insights into the human condition.

The authors of the essays are authorities on the thinkers about whom they write. In most instances, they have written other essays or books about the philosophers in question.

A bibliography is appended at the end of each essay. It gives a list of the major works of the philosopher under discussion in the essay, and it also indicates works written about the philosopher that will provide additional information and a deeper understanding of the figure.

To assist the reader in tracing the lines of connection (historical and intellectual) among the various philosophers, the names of other thinkers whose works bears some significant relationship to the thought of the philosopher being discussed are given in small capitals.

A few remarks may be appropriate here about the peculiarities of style in the essays on Chinese and Indian thinkers. Commentators on Chinese philosophy use two different systems of romanization in rendering Chinese names and words, the pinyin and Wade-Giles systems. In this book the pinyin system is employed, but because both formulations are common, the Wade-Giles equivalent is also provided within brackets (on the first occurrence of the term). The essays on Confucius and Mencius latinize the proper names of these philosophers but give other terms in pinyin. In some instance, several different proper names are associated with the same philosopher, and these names are also indicated in parentheses. The essays on the Indian thinkers contain many diacritical marks that are used in the original Sanskrit or Pāli languages.

The essays in this book portray the rich fabric of philosophical thought that has been woven over the centuries and throughout the world by some of humankind's greatest thinkers. Together the essays provide a chart to humanity's "philosophical condition." And they invite the reader to participate in a search that continues today. Philosophy is decidedly not simply a product of our past; it is an ongoing venture, but

one frequently shaped by the issues found in its history while always on the lookout for new insights into reality and humanity. To read these essays, and to share in the intellectual excitement they convey, is to undertake, truly, an adventure of ideas.

1

Aquinas

Timothy Renick

Thomas Aquinas (1225–1274 CE) ranks among the most important thinkers of the medieval time period and among the greatest minds produced by Christianity. His systematic approach to theology helped to define the Scholastic movement, and his appropriations of the arguments of ARISTOTLE were instrumental in restoring classical Greek philosophy to the European intellectual mainstream. Furthermore, Aquinas's applications of natural law theory proved foundational to Enlightenment conceptions of the state and to the emergence of international law. Fitting neatly into neither the category of traditional theologian of the Middle Ages nor that of modern philosopher, Aquinas came to represent a new breed of Christian thinker: a defender of orthodoxy who turned to pagan, Muslim, and Jewish sources for support, and a Christian who used philosophical tools – including reason, induction, and empirical evidence – to understand and advance his faith.

Born near Naples, Italy in 1225 CE, Aquinas was sent at the age of five to study at the Benedictine monastery of Monte Cassino, where he remained for ten years. At fifteen, he enrolled at the University of Naples and first was exposed to the works of Aristotle (whose writings only recently had been reintroduced to European scholars after centuries of suppression). While at Naples, Aquinas joined the Dominican order, much to the displeasure of his family; Aquinas's family kept him under house arrest for almost two years in an unsuccessful attempt to force him to reverse his decision. When his family relented, Aquinas traveled to Cologne and Paris to study under the Dominican scholar Albertus Magnus (Albert the Great). In 1256, he became a professor of theology at the University of Paris, where he taught from 1252 to 1259 and from 1269 to 1272 (holding the Dominican chair). He also taught at Anagni, Orvieto, Rome and Viterbo. He died on March 7, 1274 on his way to the second Council of Lyons. Aquinas was canonized in 1323 and, in the late

nineteenth century, his thought and ideas, collectively referred to as Thomism, were designated the official theology of the Roman Catholic Church – a designation that stands to this day.

During his relatively brief lifetime, Aquinas was the author of over sixty works, including extensive writings on scripture and commentaries on the works of such thinkers as Aristotle, Boethius, Pseudo-Dionysius, and Peter Lombard. He is best known, though, for two long theological treatises, the *Summa contra Gentiles* (in which he defends Christian beliefs against non-Christians) and the *Summa Theologica* (his "summation" of theology). Over two million words in length, the *Summa Theologica* has become the work which defines Thomism and which may well represent the pinnacle of Western systematic thought.

While Aquinas would define himself as a theologian and not as a philosopher, central to his importance historically is his claim that philosophy and reason are essential to theology. Challenging a prevailing view of his day which held that philosophy is a threat to faith and must be suppressed, Aquinas argues that philosophy in fact serves as a "preamble to faith." It rationally establishes the truth of claims such as "God exists" and "God is one" and thus provides a firm foundation for belief. Moreover, through "similitudes" – the use of conceptual analogies – philosophy supplies insights into the nature of religious claims that otherwise defy human understanding; for instance, while God's infinite "goodness" cannot be fully grasped by the finite human, reason applied properly allows one to construct an analogy between that which is knowable (the goodness seen in human experience) and that which is not (the perfect goodness of God), thus enabling one to discern aspects of the divine. Perhaps most significantly, philosophy provides the basis for defending the truth of Christian claims against Jews, Muslims, and other non-Christians by developing an independent and universal language of argumentation; for example, while pagans might not surrender their polytheism upon being told the Bible asserts that God is one, they surely will have to yield their belief, Aquinas thought, when confronted with a rational argument that establishes the truth of monotheism. (See the discussion of his *via eminentiae*, below.) Thus, philosophy becomes a useful tool for the church, particularly at a time when the insulation of Christendom was being pierced by events ranging from the Crusades to the founding of "modern" universities at Oxford, Cambridge, and Bologna.

While ostensibly giving Christian belief a privileged position over philosophy – "If any point among the statements of the philosophers is found to be contrary to faith, this is not philosophy but rather an abuse of philosophy" – Aquinas also holds that true theological claims cannot

be patently false, "so it is possible, from the principles of philosophy, to refute an error of this kind" (*Exposition of Boethius on the Trinity*, II.3, c). Reason thus can serve as an instrument not only to understand but to perfect theology. For Europe as it emerged from the so-called Dark Ages, this new-found respect for the human person and for human reason would prove revolutionary.

For Aquinas, human beings possess two rational faculties. First, there is "reason" itself, the faculty which processes sensory data to draw general conclusions such as "fire is hot." Second, there is the "intellect" – a faculty which intuits non-empirical, *a priori* truths (which Aquinas labels "first principles") such as "good is to be done and evil avoided." While the ability to learn from sensory experience is common to all higher animals, the faculty of intellect is possessed by humans and angels alone. Aquinas argues that angels, in fact, are "pure intellect." As non-corporeal beings, angels lack the physical senses to see, smell, and hear; they can only "know" in the direct, intuitive sense afforded by the intellect. Alone among all creatures, humans combine reasonable and intellectual faculties – though, especially since the Fall, both faculties emerge as fallible and incomplete.

Many of Aquinas's most important philosophical arguments must be read in terms of these dual rational faculties. For instance, in his proofs of God's existence – historically referred to as the "Five Ways" – Aquinas borrows and builds upon concepts introduced by Aristotle (and, to a lesser extent, Maimonides and Avicenna) to offer five parallel "demonstrations" of the existence of God: the arguments from motion, cause/effect, contingency, gradation, and governance. Each demonstration starts with an empirical observation. In his first Way, the argument from motion, Aquinas simply observes that things move. Reason then recognizes a correlation in its examination of observable experience: "whatever is moved is moved by another." Each instance of motion is caused by some prior motion. But, Aquinas concludes, this sequence "cannot go on for infinity. . . . It is necessary to arrive at a first mover, moved by no other; and this everyone understands to be God" (*Summa Theologica*, Part I, question 2, article 3). If motion exists, and motion is caused, there must be some first mover that initiates the motion, lest everything would be at rest. Thus, Aquinas holds, we rationally arrive at God.

For modern critics like Immanuel KANT, this argument is fatally flawed. Although Aquinas starts with a correct empirical observation about the causal nature of motion, they contend that he contradicts himself by positing a first mover, God, who himself is able to cause motion but whose motion is not caused by anything prior. No empirical

data support the concept of an unmoved mover, so it is irrational to posit such an entity.

If Aquinas believed that human rational capabilities were purely empirical in nature, he would have to agree with this conclusion. But Aquinas holds that intellectually each human is a *composite* of reason and intellect, and each faculty contributes in its own way to the proof. It is reason which surmises that all motion is caused; and it is intellect which at that point steps in and asserts that if all of the links in the chain of motion were contingent links, dependent on something prior, we would have no complete explanation of motion. The intellect, intuiting a first principle roughly equivalent to "there must be an explanation," is rationally compelled to posit, Aquinas thinks, an unmoved mover to account for the observable phenomenon.

Aquinas argues that reason and intellect not only give humans the ability to know that God exists, but also provide us with glimpses into the nature of God. An advocate of the *via negativa*, Aquinas holds that we can know about God through rationally examining what God is not; while we cannot grasp God's infinite nature, for instance, we can comprehend our own finitude and understand, by means of our rational faculties, ways in which God is *not* like us. Additionally, philosophy can play a more positive role in allowing us to understand aspects of God, the *via eminentiae*. For example, if one starts with the premise that God is a first mover, one can rationally prove (to the pagan, for example) that God is a unity, i.e. one and not many. That which is compound must be brought together by something prior; a first mover by definition has nothing prior to it (lest it would not be first); therefore God must not be compound. Of course, for Aquinas, what we can know of God by means of even the *via eminentiae* is limited: "The knowledge that is natural to us has its source in the senses and extends just so far as it can be led by sensible things; from these, however, our understanding cannot reach the divine essence" (*ST*, I, q.12, a.12). Complete knowledge of the divine comes only to those blessed with a supernatural gift from God.

Aquinas's response to the problem of evil echoes the positions of Plotinus and AUGUSTINE before him. Evil is not a substance created by God; rather, evil is a "privation" of the good and, as such, has no metaphysical status: "Hence it is true that evil in no way has any but an accidental cause" (*ST*, I, q.49, a.1–2). Since what we call evil is simply the removal of some of the good from a wholly good substance, evil is uncreated and, as such, unattributable to God.

Aquinas's response to the theological dilemma of free will – the question of how human beings can possess free choice in the face of a

sovereign, all-powerful, and all-knowing God – is historically more novel. Aquinas describes each human act as being constituted by two components, an end and the means to that end. It is the intellect which intuits the end, which for humanity is ultimately the happiness found in the "knowledge of God." This end is supplied to humans by God, it is part of their created nature, and it is not subject to human choice. The empirical faculty of reason, through experience and the observation of precedent, then chooses the means to this end for which the human has been created. This choice in unencumbered by God: "People are in charge of their acts, including those of willing and not willing, because of the deliberative activity of reason, which can be turned on one side or the other" (*ST*, I–II, q.109, a.3). Are people, then, free? Yes and no. Just as human beings have no freedom to change the fact that they need a certain amount of vitamin C to survive, they have no choice over their created end. This fact is established by God. But just as a given human being can choose to refuse to select the proper means to satisfy his or her vitamin requirements – one could elect to eat nothing but proteins or nothing at all – humans have the unencumbered ability to choose whatever means they would like, even means that serve to take them away from their created end of happiness. Thus, both God and the individual contribute to every human act: God establishes the end and the human selects the means.

How, then, is God's sovereignty preserved within Aquinas's system? If (as he claims) the good and loving God wills that all humans reach happiness/perfection and if (as he also claims) humans have the ability to freely choose evil means, cannot humans thwart God's will? Aquinas thinks not. He introduces a distinction between two ways in which God wills events to occur. God wills some events to occur necessarily, and other events contingently. It was in the first manner that God willed "Let there be light" at the beginning of time; the mere fact that God willed the event in this manner brought it into reality. It is in the second, contingent sense, however, that God wills that all humans reach perfection. Much like a person might wish for double sixes in rolling dice, recognizing that the outcome rests contingently on natural probabilities, God wills that all humans attain perfection, knowing the ultimate result is contingent upon the vagaries of personal free choice. God's will is fulfilled and God's sovereignty is preserved, even when an individual person chooses evil, because God wills precisely that the individual's attainment of perfection come only if chosen freely by him or her. Thus, Aquinas argues, humans can be free, God can be good (willing perfection for all), and God's *contingent* will can be fulfilled even in cases in which individuals follow the path of sin (*ST*, I, q.19, a.8).

Since the end of humanity is created by God and pursued naturally by all humans, Aquinas believes that sin results not from an act of will or a failure of intellect but from ignorance in choosing means. People are literally good willed; they will the good as their end at all times. Immoral acts are caused by a failure of reason – a failure to choose means appropriate to attaining this created end. Aquinas's depiction of the nature of immorality is in sharp contrast to Augustine, who believes that humans often seek evil for evil's sake. For Aquinas, humans seek only good, but they end up doing evil when, through an ignorance which is often culpable, they choose inappropriate means.

Aquinas's concept of law focuses on the issue of what constitutes the appropriate means to the god-given end. A law properly understood is "nothing else than an ordinance of reason for the common good, promulgated by him who has care of the community" (*ST*, I–II, q.94, a.4). For Aquinas, there are four primary types of law: the *eternal law*, which is the plan of God that directs every entity in the universe – animate and inanimate alike – to its appointed end; the *natural law*, which is that aspect of the eternal law which is accessible to human reason; the *human law*, which is the equivalent of the positive law and must never conflict with the natural law; and the *divine law*, which supplements the other types of law through sacred text and direct revelation from God.

Of these, the natural law receives the greatest amount of attention in Aquinas's writings. In pursuing the natural law, humans must apply their reason to the task of determining which means will direct them to their god-given end. The more nearly an act approaches this end, the more just it is; the further it deviates, the more unjust. For example, Aquinas argues that the created ends of human sexuality include procreating the species and unifying a husband and wife in the bond of matrimony. Thus, reason tells us, fornication and adultery both emerge as immoral since neither act serves to unite husband and wife to each other, but adultery becomes the greater sin since it entails a more pronounced abuse of unity (through violating the existing marriage bond of at least one of the parties) (*ST*, I–II, q.153, a.2). Aquinas's natural law arguments on sexual matters still ground contemporary Roman Catholic opposition to such issues as birth control, *in vitro* fertilization, and masturbation. Each act is seen as a violation of the procreating and/or unifying end of sex. His natural law arguments also contribute significantly to the just war tradition. In the *Summa Theologica*, Aquinas expands upon pre-existing understandings of the rules for when one may initiate war (the *jus ad bellum*) and advances concepts such as double effect – the idea that if a single act has two results, one good and one evil, the act is only necessarily condemnable if the evil effect is intended – which are

now integral to moral prescriptions for the fighting of war (the *jus in bello*).

Since a law, by definition, pursues the good, human laws which fail to do so – unjust laws – are "not laws at all" according to Aquinas. They have no moral claim on individuals (though they may be adhered to under certain, practical circumstances).

Aquinas's concept of the state reflects this insight. A supporter of a mixed form of government in which the monarch derives his power from an aristocracy and the aristocracy gains its power from the polity, Aquinas holds that government is only legitimate when it pursues the good (*ST*, I–II, q.105, a.1). A monarchy which turns from the good to evil in its policies and actions becomes, by definition, a "tyranny" and is undeserving of the citizen's allegiance. While Aquinas cautions against a citizenry pursuing rebellion cavalierly – the anarchy caused by the ensuing unrest is often worse than the tyranny itself, he warns – his views represent a significant break from the arguments of previous Christian thinkers. Unlike the hierarchical vision of the state offered by Augustine, in which God appoints rulers and rulers reign by God's authority (making rebellion against rulers equivalent to rebellion against God), Aquinas portrays the citizenry as equipped with the potent faculties of reason and intellect and possessing the resulting ability to determine for itself whether just policies – means appropriate to the common good – are being pursued. By its collective authority, the citizenry has the moral right to rebel against unjust rule: "Nor should the community be accused of disloyalty for thus deposing a tyrant, even after a promise of constant fealty; for the tyrant lays himself open to such treatment by his failure to discharge the duties of his office, and in consequence his subjects are no longer bound by their oath to him" (*On Princely Government*, chapter VI). Each citizen's moral obligation remains to the good; it is the tyrant who has turned from his appropriate path. By popularizing such concepts, Aquinas emerges as a seminal figure in the development of modern philosophical notions of political authority and obligation; historical figures including Thomas Jefferson and Martin Luther King cite his thought in justifying disobedience to unjust rule.

Thomas Aquinas's works in general and his *Summa Theologica* in particular remain among the most important and impressive examples of philosophical system building in the history of the West. While contemporary philosophy has come to reject many of the explicitly theological components of Aquinas's thought, especially with respect to his metaphysics, Aquinas still is widely and rightfully regarded to be the finest philosopher of the medieval time period and a pivotal transitional figure in the move to modernity.

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2

Aristotle

Russell Dancy

Aristotle (384–322 BCE) was born in Stagira. His father, Nicomachus, was a doctor at the court of Macedonia. The profession of medicine may well have influenced Aristotle's interests, and his association with Macedon was lifelong: in 343 he became tutor to Alexander the Great. After Alexander's death in 323, the political climate in Athens turned anti-Macedonian, and Aristotle went into voluntary exile. He died shortly thereafter, in 322.

At the age of 17, Aristotle went to Athens and studied at Plato's Academy for twenty years, until the death of PLATO in 348/7. Plato was succeeded as head of the Academy by his nephew Speusippus (*c.*407–339). Aristotle left Athens, traveling with another Academic, Xenocrates (*c.*396–314), who later succeeded Speusippus. There is no solid reason for supposing that Aristotle was disaffected with the Academy, or ever expected to become its head; both Speusippus and Xenocrates were senior to him. It was during this period that Aristotle acted as tutor to Alexander; he also married Pythias, adopted daughter of one of Aristotle's fellow students at the Academy, Hermeias of Atarneus. Aristotle returned to Athens in 335 and founded his own "school," the Lyceum or the "peripatetic school" (either because Aristotle and others lectured while walking or because the grounds had noted walkways).

Writings

Aristotle, like Plato, wrote dialogues. None has survived, nor have other works he wrote "for publication"; there are quotations or paraphrases from these lost works in later authors, and such material constitutes collections of Aristotle's "fragments." Among the more important of the lost works are: *Eudemus, or On Soul*, *Protrepticus*, *Statesman*, *On Poets*, *On*

Philosophy, *On Justice*, *On Contraries*, *On Ideas* (or *On Forms*), *On the Pythagoreans*, *On the Philosophy of Archytas*, and *On Democritus*. Some of these works are datable, and most appear to have been published early in Aristotle's career, while he was still in the Academy.

Cicero (*Academica* 2.38.119) speaks of Aristotle's "golden river of eloquence," and it is the lost works to which he is referring; what survives cannot be so described. What survives, rather, appears to be lecture notes, in which the style is compressed sometimes to the point of unintelligibility. This leads to a false contrast with Plato: Plato seems lively, where Aristotle is dry as dust. Their surviving works do present that contrast, but there is no reason to extend that to a comment on the men themselves.

What we have of these lecture notes is divided into separate areas of philosophy: logic (broadly conceived), natural philosophy or "physics," "psychology" or the soul, biology, metaphysics, ethics, political philosophy, rhetoric, and poetics. This division into disciplines presumably does not go back to Aristotle, but is an artifact of the early editions of these writings: there are intricate interconnections among the views presented in these works that are to some extent masked by this compartmentalization, and some of the treatises (particularly the *Physics* and the *Metaphysics*) do not appear to have been composed by Aristotle as units.

Development

Some think that a developmental pattern can be discerned in the material we have: for example, the early dialogue *Eudemus* appears to have presented a radical body–soul dualism of a sort the later treatise *On the Soul* could not have countenanced. But the question of Aristotle's development is a highly controversial matter, and proponents of the developmental point of view do not agree.

The most famous developmentalist is Werner Jaeger, who believed that Aristotle started as a follower of Plato and gradually drifted in a more empirical direction. This has been challenged on the ground that the fragmentary material from the early lost works already shows Aristotle objecting to Plato's views; on more than one point, one might see Aristotle as later approaching rather than receding from Platonism. But many continue to find this approach unpromising.

Logic

The first several books of the Aristotelian *corpus* – *Categories*, *De interpretatione*, *Prior Analytics*, *Posterior Analytics*, *Topics* (with *On Sophistical*

Refutations) – are commonly referred to as the "*Organon*" or "instrument" of philosophizing.

Aristotle's categories are variously types of predication and kinds of being: the predicate term in "S is P" may indicate what S is, its "substance" (the traditional translation for *ousia*) – it's a man, a horse – or how much of it there is in one or another dimension, or one way or another in which it is qualified, or something to which it is related, where it is, when it is, and so on. Alternatively, these terms give us different types of being: substances, quantities, qualities, relatives, places, times, and so on. So construed, substances form the bottom level, and so-called primary substances the rock-bottom of that level. In the *Categories*, the primary substances are individuals: men, horses, etc. Aristotle's fullest list of these categories (*Categories* 4, *Topics* I 9) enumerates ten; elsewhere fewer are listed: the enumeration is not fixed.

If we conceive "logic" more narrowly, as the analysis of the structure of argument or the study of validity, only the *Prior Analytics* and the *Topics* qualify for the label. The former gives us Aristotle's formal analysis of argument, in which all arguments are said to reduce to "syllogisms": arguments having three terms in two premises employing one of the four quantified predicational patterns "every B is an A," "some B is an A," "no B is an A," and "some B is not an A." Aristotle's treatment of these arguments is awesome, as is his formulation of a completeness theorem for his logic: the claim that all arguments can be so analyzed. His attempt to prove it (in I 23) is less fortunate, since the claim is false.

Aristotle attempts to extend his syllogistic to include modal syllogisms (premises such as those above modified by "necessarily" and "possibly"). This is some of the most difficult material in Aristotle, and there appears to be some confusion in his treatment of it.

In the *Topics* Aristotle gives rules of thumb for "dialectical" argument: argument that takes place between two individuals in dialogue. This work goes back to the Academy, where such "dialectical" arguments were used as training techniques. It antedates the *Prior Analytics*, and, although it is concerned with validity, it does not have as systematic a method of analysis as does the latter.

The *Posterior Analytics* goes back into the area of logic more broadly conceived: it concerns the analysis of knowledge. According to the analysis, exemplary knowledge is systematic, laid out in premise-and-proof form, almost always in syllogisms. That layout gives to each of the domains of knowledge, or each of the "sciences" (not a separate word in Greek), a particular structure: each "science" considers a single domain of objects, a "genus" or "kind," by starting from unproven assumptions about that kind and deducing ever more specific conclusions about it. Two sorts of examples dominate the treatise: biological

ones and mathematical ones. Aristotle's picture of mathematics was based on a pre-Euclidean axiomatization of "elements" about which we have no independent information: this is most unfortunate, since there is no plausible way of applying syllogistic to actual mathematical argument as we know it from Euclid on. If biology is construed as simply taxonomic, syllogistic might more plausibly apply.

There is a characteristic tension in this treatise between two tendencies: on the one hand, only eternal, non-fortuitous, and universal connections can be the objects of knowledge or science (I 8, 30, 31), and on the other, *contra* Plato, science or knowledge arises from sense-perception (II 19). This looks like a tension between vestiges of Platonism and a nascent empiricism. Arguably, Aristotle never fully resolved the conflict.

Natural philosophy

Aristotle's "physics" in fact comprises all of what takes place in nature: his views on the soul and on biology as well as what is more conventionally regarded as "physics."

Physics I is devoted to problems pertaining to change, and it is here that Aristotle introduces the tripartite analysis of change – involving form, matter (subject), and privation – that stays with him throughout the rest of his work. To illustrate: when Socrates goes to the beach and gets a tan, he starts out pale and ends up dark, and he is there all along. He constitutes the subject for the change, and his initial pallor might be the privation and final tan the form he acquires in the change. This analysis is extended to cover the case in which he is born or dies: he can no longer be the subject that undergoes the change, since, in the latter case, he does not survive it; what does survive it is referred to as matter: the term "matter" is used for any continuing subject that survives a change, but comes into its own in cases such as the death of Socrates. The notion of matter did not appear in the *Organon*, and some think this significant, especially as it is prominent, and raises prominent difficulties, in later work (see below on Metaphysics).

In II we encounter the famous "four causes," known now by their scholastic titles: the "material," "formal," "efficient," and "final" causes. "Cause" translates a word (*aition*) that meant, used in a law court, the "guilty" or "responsible" party. Aristotle is listing four sorts of thing that might be held responsible for something's being the way that it is. As an example (Aristotle's), consider a bronze statue. Taking the causes in the above order, you might ask what it is made of (bronze), or what sort of

thing it is (a statue), or what initiated whatever changes brought it into being (its sculptor), or what it is for (decoration).

As the example illustrates, Aristotle does not in the first instance focus on cases in which one event causes another (the situation taken as typical for the analysis of causality at least since HUME), and the extension of his analysis of efficient causality to such cases is somewhat difficult. But to the extent that Aristotle does take account of cases in which events cause events, one important difference between him and us is that Aristotle employs nothing like a principle of inertia, to the effect that once something is set in motion it will continue to move until something stops it. Rather, for Aristotle, the motion that causes another motion is exactly contemporaneous with it: the hand that pushes the book along the table is acting causally for precisely as long as the book is moving, and when the hand stops, the book stops. This model of causality (which we think of as motion modified by the effect of friction) gives Aristotle and his successors trouble over projectile motion, which Aristotle tried to explain, to his own dissatisfaction, by an aerodynamic theory in which the projectile causes eddies in the air that push the projectile along as it moves.

Books III and IV give analyses of motion, the unlimited (infinite), place, void, and time. Aristotle's procedure in each case is the same: he raises problems, discusses the views of others, and finally presents an analysis that solves the problems and explains the views he takes to be erroneous. It is plain that this is not a presentation of the "science" of "physics" such as the *Posterior Analytics* might have led us to expect; it is more like the philosophical groundwork that might have preceded such a presentation. Since part of Aristotle's aim is to preserve what he can of the views handed down to him, his results are generally conservative, but not altogether: he denies that there can be an actual infinite or a void.

Later books of the *Physics* deal with temporal and spatial continuity and with theology. The last book, in particular, gives the most detailed treatment to be found in Aristotle of the familiar proof (adapted by Thomas AQUINAS) for the existence of an "unmoved mover": something that causes motion without itself moving. The proof is based on a causal principle: motion requires an efficient cause. This sets up a regress of efficient causes that must, Aristotle thinks, be stopped by at least one first efficient cause or unmoved mover (there could be many, but Aristotle prefers one as the simpler hypothesis). The contemporaneity Aristotle demands of efficient causal action with its effect has an important corollary here: the first cause of the motion in the universe does not precede that motion but goes along with it. This makes it possible

for Aristotle to argue for the existence of a first mover although part of his proof requires that the universe has always and will always exist. Aristotle's first mover is not a creator.

There are further elaborations of Aristotle's views on these matters in *Metaphysics* XII: see below.

The treatise *On Coming-to-Be and Passing-Away* deals with the nature of such changes and ultimately with the four "so-called 'elements'" earth, water, air, and fire, which are not really elements since they undergo transformation into each other, but are still as simple as any material can get. It remains a disputed question whether this drives Aristotle to the notion of a characterless "prime matter" that provides the material continuant for such changes.

The treatise *On the Heavens* adds a fifth element, unnamed there but "aither" in the later tradition, which is different from the previous four in that its motion is naturally in a circle whereas their motions are rectilinear. This is the element that composes the heavens. The treatise appears to be relatively early, and comes as close as anything in Aristotle to adhering to the syllogistic model that dominated the *Posterior Analytics*. Despite its title, its last two books deal with sublunary bodies and with the four elements – here Aristotle unhesitatingly so refers to them – once again.

The four books of the badly titled *Meteorology* (the Greek is much vaguer, and has no proper English translation) cover such things as comets, the nature of the sea, and chemistry, as well as winds, rain, and lightning.

Aristotle's treatment of the soul (*psuchē*), at least in the surviving treatises that deal with it, is that of a biologist: the soul is that aspect of an organism (including plants under this head) that constitutes its capacity for performing the activities characteristic of the sort of life it leads. A plant has a soul that enables it to grow and reproduce; an animal one that enables it to do that much and also to move around and perceive; a human being has one that enables it to do all that as well as think. In one of the most vexed chapters in any philosophical work in all of history (*De anima* III 5), Aristotle seems to be suggesting that there is a sort of immortality accorded to this last aspect of soul, but it is not an immortality that gives much comfort, since it does not carry any memory with it: even if Aristotle is allowing that you can think of your soul surviving your death (and it isn't entirely clear whether he is allowing this), he isn't allowing that your soul remembers anything of your life.

Book II contains an analysis of perception. Each sense has a domain of properties, which Aristotle refers to as "forms" (see above on the use of the matter–form distinction in *Physics* I), proper to it – colors for sight,