I Am, Therefore I Think

A Historical Introduction to Philosophy

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Preface

Although the word 'philosophy' etymologically[1] means *love of wisdom*, this is not its only meaning, though it may be its most important one. Philosophy also encompasses rational inquiry and argumentation in general, and is not restricted to any particular subject matter. The word "philosophy" may thus be defined, more broadly, as careful, sustained, critical thought about anything you could possibly think of. It is our conviction that this book will vindicate this definition. In what follows you will encounter a wide range of the ideas and arguments of some of the world's greatest philosophers. In keeping with the spirit of our definition of philosophy, you will not only learn what these ideas and arguments are, but also develop the ability to critically evaluate them based on the support given for their assumptions and the quality of their internal logic. We write this book with the hope that when you finish it you will be both better informed about philosophy and better equipped to practice it.

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[1]This word means "in its derivation" and refers to the origin of the word. Etymology is the study of the derivation of individual words and their change over time. Words have historical careers from the time they are coined until they change or die because of disuse.

~ Part 1: Ancient Philosophy ~

The Beginning of Greek Philosophical Thought

Myths

Myths are stories that explain why life is the way it is, and how human beings know it is that way. They are historical, not so much in terms of what has happened, but as explanations for what has happened over and over again. God places the first human beings into the Garden of Eden. 'Adam' stands for man and 'Eve' for the mother of all living. They are forbidden to eat of the fruit of the tree of knowledge of good and evil, the terms 'good' and 'evil' together representing knowledge of all things. The snake tempts Eve to eat of the fruit and she takes it to Adam to eat. Once they have eaten it, they become aware that they are naked. When God finds them out, they do not take responsibility. Adam blames his disobedience on Eve, who blames it on the snake. God punishes them by driving them out of paradise. Adam's punishment includes having to work by the sweat of his brow and Eve's by having to go through labor in childbirth. Because of this 'original sin,' as it is called, they will not be able to eat from the tree of life, but will now one day have to die.

This story, from "In the Beginning" of Genesis, the first book of the Bible, tells us why we die, why we wear clothes, why we have to work, why a woman goes through painful contractions in labor, why a snake lost its legs and has to crawl on its belly, and gives us many other insights about our human condition before God, the Creator.

The Bible story was *demythologized*, meaning that *myths* were taken out of the creation story. Previously these stories were filled with the warfare and dismemberment of gods. Here in Genesis God walks through the garden, the man and woman (created in God's image) live before God, and they struggle and fail to live their lives honestly in the paradise given them. Soon one of their sons, Cain, murders his brother, Abel. Then when asked by God for Abel's whereabouts, he answers, "Am I my brother's keeper?"—hiding the fact that he killed his brother.

There is a talking snake in this story, but compare it to the Babylonian creation myth. Marduk is presented as the greatest of the gods. Reciting this creation story was thought to refresh life and bring about the renewal of creation.[2]

> In the beginning nothing existed except Apsu, the sweet-water ocean, and Tiamat, the salt-water ocean. From their union springs a succession of gods, culminating in the great gods Anu and Ea, who begets Marduk. But conflict arises between the younger gods and the primeval deities. Ea kills Apsu and Tiamat determines on revenge. She assembles a horde of ferocious monsters, such as scorpion-man, with her son, Kingu at its head, whom she invests with the "Tablet of Destiny"....
>
> Various gods attempt to subdue Tiamat, but they fail and finally the pantheon chooses Marduk as their champion. Marduk accepts on the condition that he is recognized as king of the gods. He defeats and kills Tiamat: he divides her body in two, one half forming the sky, the other half the earth. From Kingu he takes the Tablet of Destiny. Next Marduk kills Kingu and from his blood, mixed with earth, creates humankind. The gods build for Marduk in Babylon his own temple, Esagila, with its ziggurat.[3]

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[2]Roy Willis, general editor, <u>World Mythology,</u> (New York: Henry Holt and Company, Owl Books, 1993), p. 62.
[3]Ibid. To update the language, we have changed "mankind" to "humankind."

Explanations not only of our human condition but of the world of nature also began with myths (*Mythos* in Greek). These stories of gods, heroes, and monsters were used to explain natural events. For example, in Greek mythology Hades steals the lovely Persephone and takes her down to his underworld. Ceres, her mother, demands that Zeus get her back. Under pressure Hades compromises and she is allowed to be with her mother three quarters of the year, and one quarter of the year she has to stay with Hades. This story explains why there are seasons, the summer warmth in which all life grows and the short but cold winter in which all plant life dies because of Ceres' sorrow during her daughter's absence.

According to Richard McKirahan Jr.,

> The traditional mythological picture did not encourage speculation about nature without reference to the gods. Many events are due to the gods--not only episodes of myth, but ordinary everyday occurrences. Rain is the doing of Zeus, the sky-god. When crops grow or fail to grow, Demeter is responsible. In a sense, this account of events posits unvarying relations between them and their divine cause, but the gods' willfulness and inconstancy tend to undermine attempts to understand or control the events that affect us. Interest will focus more on individual events and the gods responsible for them than on general regularities, relationships, and laws.[4]

As we shall soon see, philosophy began to flower at the same time that this traditional picture began to be questioned.

Logos

Logos, in ancient Greek thought, issued from mythos, and the term had many related meanings, such as *speech*, *discourse*, *word*, *explanation*, *reason*, and *order*. The universe the ancient Greek philosophers believed in was a *kosmos*—a Greek term meaning an *ordered world*[5]—and they thought this order could be grasped by reasoning. Later on, in the fourth and third centuries BCE,

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[4]<u>Philosophy Before Socrates</u>, (Indianapolis/Cambridge: Hackett Publishing Company, (1994) p. 18.
[5]<u>Philosophy Before Socrates</u>, p. 8

the Stoics identified the *Logos* with God, and in the early centuries CE Christians did as well. They believed the *Logos* to be the Second Person of the Trinity, God the Son, or Christ, as in "The Word (*Logos*) became flesh," which comes from the Gospel of John (1:14). In Hebrew 'flesh' stood for *human being* and thus the passage from John means "The Word became a human being."

Some time around the end of the seventh century (the 600s) B.C.E. thinkers began reasoning and trying to explain natural events by means of natural explanations, that is, without recourse to mythical or supernatural explanations, such as the whims of the gods. We call such early thinking *natural philosophy*. In English-speaking countries today, we would speak of it as the beginnings of *science*.

One might imagine that this kind of thinking would have started in Egypt, where the desert winds caused the Nile River to overflow. Egyptians had scattered recognitions of natural explanations, but the Greeks at that time were the first to use systematic reasoning to try to understand and explain nature based on its underlying principles and organization. These thinkers began to demythologize the world, banishing the gods, monsters, and heroes from accounts of natural events, and began to have the first inkling of the regular workings of laws in nature. Older civilizations, like that of the Egyptians, may well have been more interested in the other-worldly afterlife than in the life and nature of this world,[6] and in this sense one can speak of the Greeks "discovering the world" at this time.[7] It is their careful, sustained, critical thought which gave rise to philosophy.

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[6] A suggestion made by S. Morris Engels, <u>The Study of Philosophy, Fifth Edition</u>, (San Diego: Collegiate Press, 2002), page 22.

[7] Ibid.

From *Mythos* to *Logos*

The shift from *mythos* to *logos* should not be considered a complete replacement of one by the other. First of all there is overlap, because some of the Presocratic philosophers were natural philosophers, while others were religious figures. For example, Pythagoras was an Orphist (a devotee of the Orphic mystery religion), Heraclitus a prophet, and Empedocles a shaman.[8] The exclusion of the gods and the concomitant disenchantment of the world was very frightening to the contemporaries of the philosophers, and at first they utterly rejected it.

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[8]Robin Waterfield, <u>The First Philosophers: the Presocratics and the Sophists</u>, (Oxford University Press, 2000), p. xvi.

The Presocratics:

The Ionians

From the city-state of Miletus of Ionia on the coast of Asia Minor

Thales (ca. 580 B.C.E.) believed that earth, air, and fire come out of water and return to water: "Water is the source of all things and all things are full of gods."[9] Note the way he still recognizes the gods, but grapples with a natural explanation. Note also the important way he is trying to reduce earth, wind, and air to one element, water; that is, notice his *reductionism*. This very important methodological precept, which is used in scientific practice, explains one order of things by a more basic one which underlies it.[10] Thales was considered a sage and is said to have predicted an eclipse of the Sun. One story—which is probably apocryphal—has it that, while he was looking up at the sky, he fell into a hole and a Thracian slave girl laughed, saying that he knew what was in the sky, but not what was right before his feet. Yet the way in which he studied the heavens enabled him to predict an eclipse of the Sun and to discover the fact that the period between its solstices is not always equal.[11]

Anaximander (ca. 610 - ca. 546 B.C.E.) studied under Thales and argued that water was not the fundamental substance, but that all four elements—earth, air, water, and fire—came out of a boundless vortex which is called the *apeiron* ("without limit") in Greek. One element could not be the source of the others, he reasoned, because some things, like fire and water, are contraries, and one cannot be the origin of another. Instead, the elements all came out of the indeterminate boundless vortex; indeed, all distinct things, even such opposites as hot and cold, wet and dry. He used the word *arkhē* to describe it, which in Greek means *the first principle*. He is credited with

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[9]William F. Lawhead, The Voyage of Discovery: A History of Western Philosophy, (New York: Wadsworth Publishing Company, 1996), p. 9.

[10]In science reductionism has great value, while for the humanities the term is often pejorative. For example, psychology and sociology are thought to have *sui generis* principles many believe cannot be explained by those of biology and chemistry.

[11]Robin Waterfield, The First Philosophers: the Presocratics and the Sophists, pp. 11-12.

having drawn the first map of the world, of which he made Greece the center. He was also the first to discover the *gnomon*, at first merely an upright stick that could measure the height and the direction of the Sun. It was a rudimentary sundial that he devised to indicate solstices and equinoxes and mark the passage of the hours.[12]

Anaximenes (ca. 545 B.C.E.), Anaximander's companion, thought that air is the basic stuff of which all things are made—he considered air to be the *arkhē,* the first principle—probably because he observed rain coming down out of the air. Water comes out of the air by condensation and returns to it by rarefaction and evaporation; and so it was, he thought, with all things. That is to say, everything is composed of air which is more or less dense. Dilated, the air becomes fire. Condensed, it first becomes wind, and then clouds, then water, then earth, and lastly, stone. In the same way that our soul, which is *breath* or *air*, holds our bodies together; all of nature is bounded and held together by air, and even has its source in air.

The Significance of the Early Ionians

The early Ionians, like Homer and Hesiod before them, tried to account for the orderliness of the universe, but there is more than one way to account for it. As McKirahan says,

> Explaining events through universal laws is one way to order the universe. Another is to show that things are more closely related than their bewildering variety suggests. Hesiod's genealogical account is one way of relating entities to one another. The early Ionians adopted another strategy, identifying a small number of basic principles and claiming that other things can be explained in terms of these.

He continues (on the same page):

[12]Ibid., pp. 13-14 and p. 315.

The types of explanation the early Ionians used mark a further break from their predecessors. Homer's epics portray individual humans in particular sets of circumstances, with their own individual goals and individual deeds.... Cosmological matters receive attention largely because of this interest in individual events. It is quite otherwise with the early Ionians, whose interests center on the KOSMOS rather than on particular people, and for whom the individual is to a large extent seen as an instance of a universal.[13]

In addition, the early Ionians, unlike Homer and Hesiod, "...rejected tradition as a source of knowledge and set rational criteria in its place."[14] The early Ionians, though not the first to think or argue rationally, were the first to apply reasoned argument to cosmology and theology:

They rejected Homer's and Hesiod's authority and challenged a way of looking at the world that was universal both among the Greeks and among all the foreign peoples known to the Greeks at the time. Xenophanes [whom we shall encounter later on] discarded Homeric theology because "it is not fitting," and his authority for doing so was his own reasoning. It is hard to think of a bolder move.[15]

Pythagoras and his Followers

Pythagoras, (ca. 572 - ca. 500 B.C.E.) born on the Ionian Island of Samos, near Miletus, opened a school for his followers in Croton, on the western shore of southern Italy. He took a very different approach from Thales, whom he met as a young man, and the Ionian thinkers, because he was not interested in the basic substance, the "stuff" of which everything was made or from which everything originated, but thought instead that the forms which things have were most important, and that these were in some sense "made of numbers."

[13]Philosophy Before Socrates, p. 72.
[14]Ibid., p. 73.
[15]Ibid.

It is not very clear what that might mean. McKirahan distinguishes four different ways in which this belief could be understood. It could mean that "(a) things are identical with [i.e., are 'the same thing as'] numbers; (b) things are composed of numbers; (c) things resemble numbers; (d) the principles of numbers are the principles of all things."[16] McKirahan suggests that ambiguities in the ancient Greek language may be responsible for the intellectual fog that surrounds the Pythagoreans' core doctrine:

> In the fifth century, Greek lacked most of the philosophical vocabulary needed to distinguish between sameness and resemblance (the same Greek word HOMOIOS meant both 'same' and 'similar'), identity and composition (the two uses of 'is' discussed above), or origin and metaphysical structure. [...] These ambiguities need to be resolved before statements like the ones the Pythagoreans made about number can be fully understood, but nothing in earlier philosophy encouraged Pythagoras or his early followers to make fine distinctions.[17]

Pythagoras' followers were divided into two camps, the Akousmatikoi and the Mathematikoi:

> The AKOUSMATIKOI (the word derives from AKOUSMA, 'thing heard') learned and accepted Pythagoras' sayings simply on the strength of Pythagoras' having said them, but refused to recognize continued mathematical and scientific research as part of the Founder's intentions. In contrast, the MATHEMATIKOI (from MATHEMA, 'learning' or 'studying,' not specifically mathematical learning and studying, although the study these Pythagoreans pursued was largely mathematical) promoted the scientific studies Pythagoras allegedly began, while acknowledging the religious side of Pythagoreanism.[18]

As a religious figure, he did not lead his disciples, whose inner circle were called 'mathematicians,'[19] into natural philosophy, but rather into the Orphic mysteries and the music of the spheres. If his followers became pure enough, he taught, they would be able to hear the sound of music that the movement of the Sun, Moon, stars, and planets made circling the Earth. (The

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[16]<u>Philosophy Before Socrates</u>, p. 110.
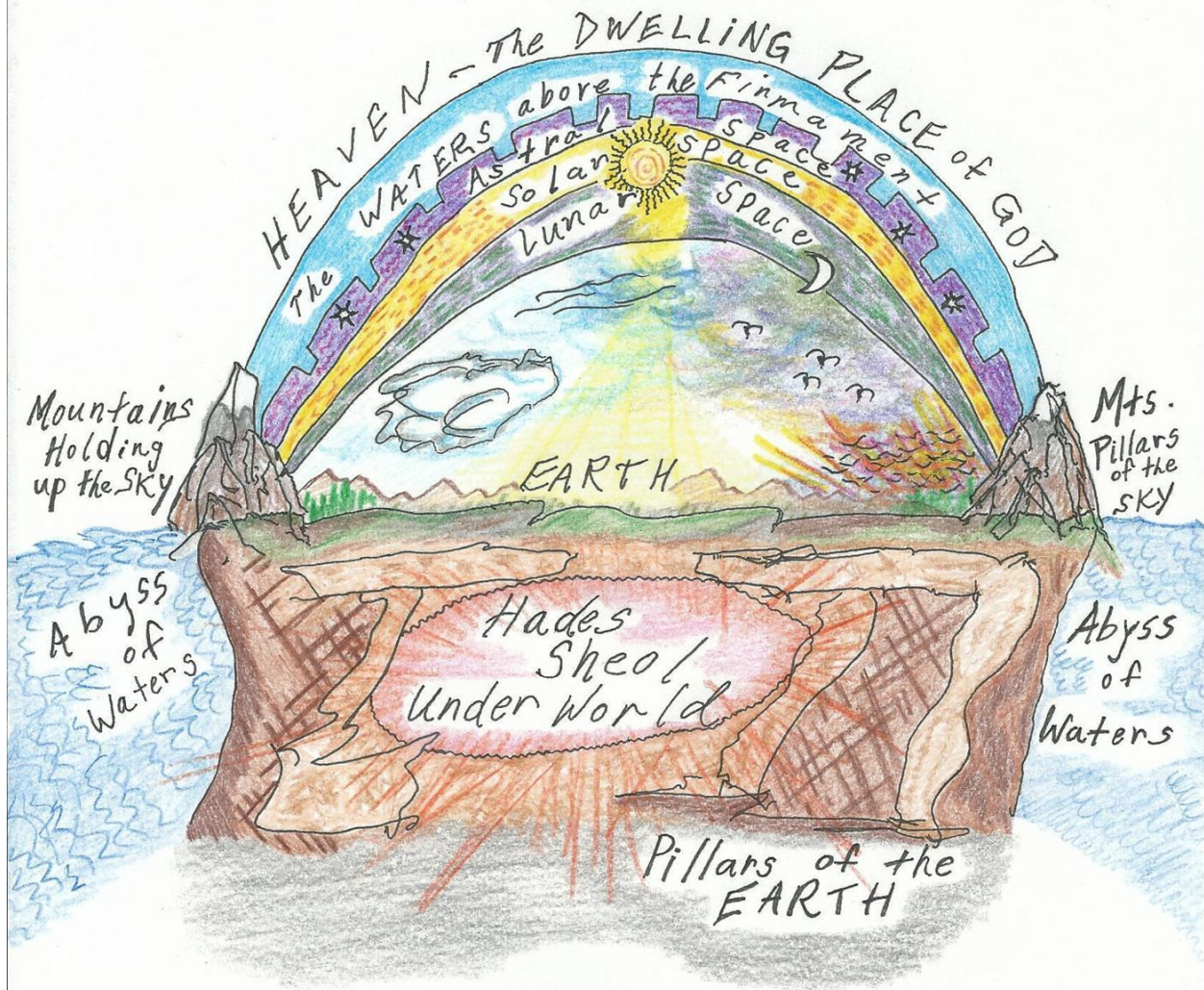
[17]<u>Ibid.</u>, p. 113.

[18]<u>Ibid.</u>, p. 89.

[19]Phoenician International Research Center, <u>Phoenician Encyclopedia</u>, <u>http://phoenicia.org/pythagoras.html</u>
Pythagoras was the head of a society with an inner circle of followers called 'mathematikoi.'
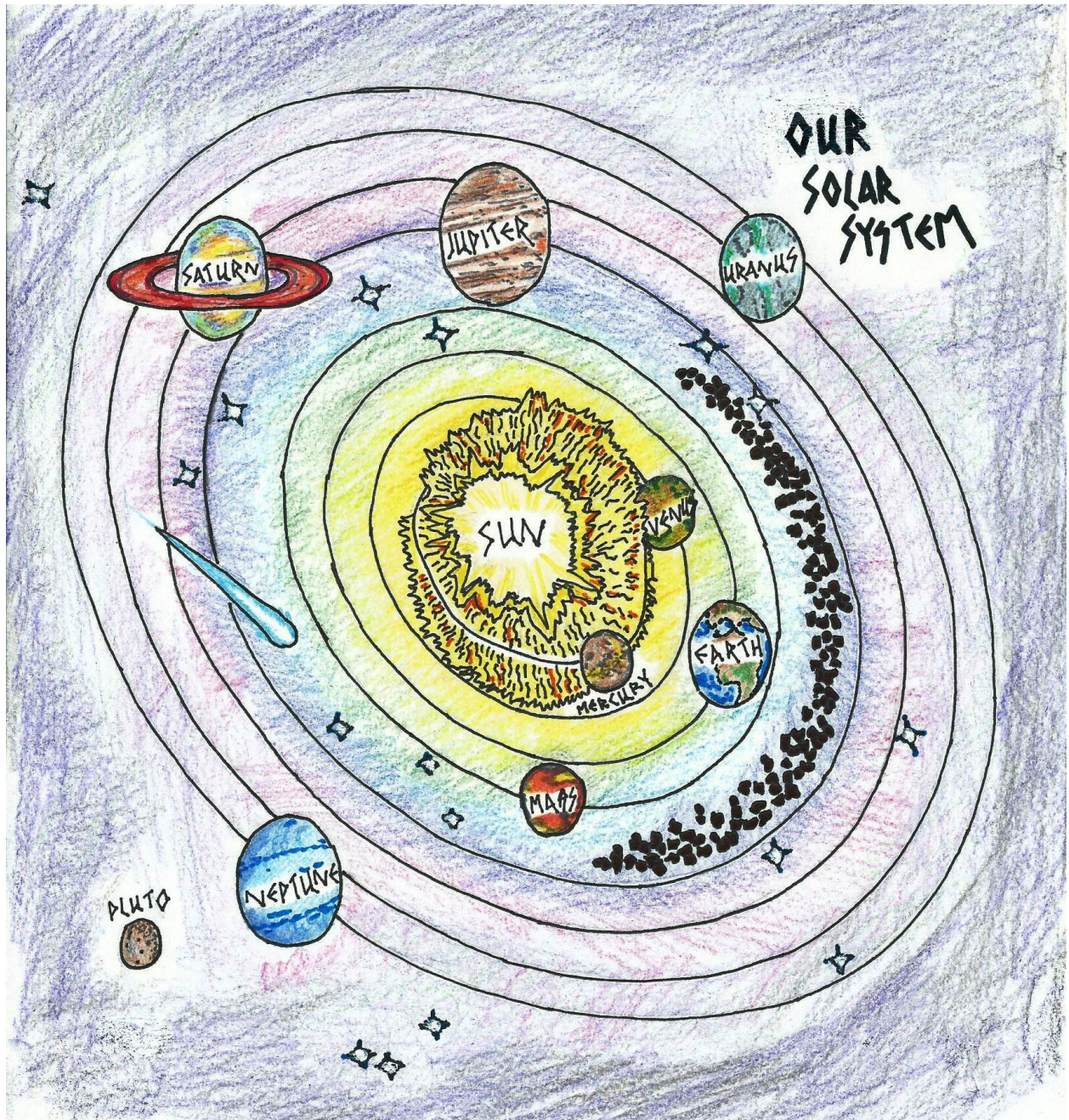
Copernican revolution, in which Copernicus reasoned that all the planets, even the Earth, circled

the Sun, was two thousand years away, and even then was not initially accepted. The ancient

Greeks knew that the Earth was round and had even calculated its circumference with a fair

degree of accuracy, but they did not believe that it moved.)

ANCIENT CONCEPTION of the UNIVERSE

HEAVEN – The DWELLING PLACE of GOD

The WATERS above the Firmament

Astral Space

Solar Space

Lunar Space

Mountains Holding up the Sky

Mts. Pillars of the Sky

EARTH

Abyss of Waters

Abyss of Waters

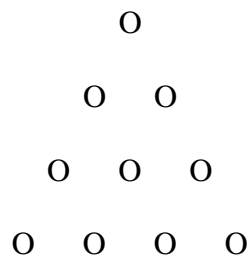Hades Sheol Under World

Pillars of the EARTH

Pythagoras and his followers discovered the numerical ratios of the primary musical intervals, called thirds, fourths, and fifths. A triangle composed of ten dots in four rows, called a 'tetraktys,'

$$O$$
$$O \quad O$$
$$O \quad O \quad O$$
$$O \quad O \quad O \quad O$$

was used to discover these musical intervals. This discovery marks the first time that something qualitative had been reduced to something quantitative, a type of reduction that, given the successes and advances of modern science, is something we now take for granted.[20]

The tetraktys was also used to make many other mathematical discoveries. Pythagoreans not only discovered the famous theorem that bears their name, but also defined odd, even, square, cubic, prime, and composite numbers. Pythagoras was the first to use the word 'philosopher,' from the Greek words *philos* and *sophia*—which mean *love* and wisdom, respectively—to mean a "lover of wisdom." We have already noted that one group of his disciples were called 'mathematicians.' The Greek word *mathema* merely meant *knowledge* and *learning,* and further, *matthes* meant a disciple. For example, the Biblical name 'Matthew' means *disciple*. But because these followers of Pythagoras were so very much associated with numbers, *mathematikoi* or mathematicians have forever after been associated with numbers; and of course, mathematics is now the name of their field of study. Science has followed Pythagoras

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[20] Philosophy Before Socrates, p. 92

in using mathematics to describe the nature of the universe, but it has not similarly used music (as Pythagoras must have imagined was possible; thus his intriguing concept of "the music of the spheres").

Heraclitus, "The Obscure" (ca. 535 - ca. 475 B.C.E.) a haughty aristocrat from Ephesus, was also a religious figure and is often called "the obscure prophet." He left us with aphorisms that he made intentionally difficult to understand; he expected the reader to take ten steps toward him while he took a grudging half step toward the reader. His puzzling paradoxes, however, are worth the effort required to understand them. Heraclitus describes the *Logos* as the world speaking to those able to hear, and contrasts its divine understanding with human understanding, although he finds that the human can attain the divine understanding.[21] For Heraclitus, the Logos is that in accordance with which everything happens. The Logos is "common," in the sense that it applies to everything in existence, and also in the sense that, because of its objectivity, it can be grasped by everyone.[22]

Heraclitus held that our waking life is sleep, from which we need to be awakened to a higher understanding.[23] He is considered the first systematic moral philosopher.[24] Rather than continuing natural philosophy, moral philosophers think about us—that is, human beings—as *people;* more specifically, as *moral agents*, beings who are capable of acting rightly or wrongly, and who are responsible for their actions. As a moral philosopher Heraclitus thought about the human condition, and his views on morality were novel in that they introduced theorizing and

[21]A contemporary of Heraclitus said, "Human reasoning is born from the divine *Logos*." Robin Waterfield, p. 32.
[22]Philosophy Before Socrates, p. 133.
[23]Robin Waterfield., p. 33.
[24]Ibid., p. 37.

argument into moral thought. Heraclitus thought that understanding the Logos is the most important thing in life, and that this understanding makes one wise. Since the Logos is divine, the more one understands the Logos the closer one is to divinity, and the more the Logos dwells within one's soul.[25]

Heraclitus' work in moral philosophy did not preclude his contributing to the natural philosophy of his day. For him fire, or more precisely, pure fire, was the divinized elemental principle or *arkhē*,[26] in whose flames all things were created and destroyed.[27] Fire for him was a basic process, constantly changing but ever remaining the same. He believed in the identity or coincidence of opposites[28] and in an underlying connectedness which he thought was like war.[29] "War is the father and king of all," he said, and "Everything happens in accordance with strife and necessity." He illustrated the tension of opposites with the examples of a bow and its string and the string of a lyre, which in the one case shoots the arrow and in the other sounds the note.[30] He argued for a cautious use of the senses, whereas Parmenides, whose thinking was diametrically opposed to that of Heraclitus, ascribed only illusion to them. For Heraclitus, fire symbolized change nicely: "Everything changes but change itself" captures his thinking in a nutshell.

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[25]Philosophy Before Socrates, pp. 149-50.

[26]Robin Waterfield, p. 34.

[27]Heraclitus compared fire with gold (thought of as money): goods can be turned into gold and it can be turned back into goods again.

[28]The term "coincidence of opposites" itself, however, is not found in Heraclitus, but derives from Nicholas of Cusa in medieval times.

[29]Robin Waterfield, p. 34.

[30]Aristotle complained that in affirming opposites Heraclitus broke the law of contradiction, making all statements true. But Heraclitus was thinking in terms of change and motion taking place over time, and Aristotle was not. Contradictions, in order to be genuine contradictions, would have to take place in the same context and at the same time. See Robin Waterfield, p. 33.

The assertion "You can't step into the same river twice"[31] is usually attributed to Heraclitus. However, it should be noted that the authenticity of the fragment has been disputed. It contradicts another fragment of his, in which he says, *"Upon those who step into the same rivers, different and again different waters flow."*[32] Plato is partially responsible for this traditional interpretation of this fragment, and indeed of Heraclitus' philosophy as a whole. He presents Heraclitus as holding that nothing can be described, because all things are changing so quickly that no descriptions can apply to them.[33] McKirahan disagrees with this interpretation. On his view, Heraclitus "…came to the paradoxical realization that stability depends on change."[34] "To return to the river fragment", he continues,

> We now see that it, like [Heraclitus' fragment number] **10.78**, stresses that identity persists through, or because of, change.… It is easy to take [this fragment] as a paradigm for the KOSMOS as a whole, whose identity requires change, primarily the regular interchange of the "elements."[35]

The Eleatic Philosophers

Parmenides (ca. 515 - ca. 440 B.C.E.) of Elea (a city founded by Ionian refugees in southern Italy)[36] wrote poetry of the Homeric kind, and may have been a shaman or mystic as much as a philosopher.[37] He was, nevertheless, a rigorous logician, and reasoned that being was changeless despite all appearances of change. Only being, he thought, could exist; non-being could not, because it could not be thought. For example, water is colorless, odorless, tasteless, etc. If such a

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[31]Robin Waterfield, p. 41.

[32]Fragment 10.64, translated and quoted in <u>Philosophy Before Socrates</u>, p. 122, our emphasis.

[33]<u>Philosophy Before Socrates</u>, p. 143.

[34]<u>Ibid.</u>, p. 144.

[35]<u>Ibid</u>.

[36]S. Morris Engels, <u>The Study of Philosophy</u>, p. 29.

[37] Robin Waterfield, p. 49.

"substance" were weightless as well, and had absolutely no properties, it could neither exist nor even be thought.

Parmenides' chief aim was to repudiate the world of the senses. "The familiar world of change, motion, and multiplicity must be mere opinion, for the true reality by logical necessity is changeless and unitary."[38] Parmenides also may have been the first to recognize that the Moon derived its light from the Sun and that the morning star was in fact the same heavenly body as the evening star (although he may not have known that it was the planet we now call Venus).[39] The goddess Persephone, or perhaps Necessity personified, purportedly took Parmenides from the light of the upper world through day and night into a place in the darkness of the underworld, the traditional place of the roots of day and night as well as of the daily birthplace of the Sun. "Maiden charioteers, the daughters of the Sun, have left a place of darkness and come up to the light to fetch Parmenides...."[40]

These lines come from poems by Parmenides called the "Way of Truth" and the "Way of Appearance," the former standing for the realization that all is one, as he believed and taught, and the latter standing for the delusive beliefs in plurality and change adhered to by the mass of humankind. These poems contain, among other things, his argument that if non-being has no attributes it cannot be thought and cannot exist. "What is cannot be other than what it is, in space, time, or intensity. Thus all kinds of change are eliminated—both local motion and quantitative change."[41]

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[38] Richard Tarnas, The Passion of the Western Mind, (New York: Ballantine Books, 1991), p. 20.
[39] The Sun, Moon, and stars draw arcs through the sky, while the planets move in *epicycles*, that is, they made loops in their apparent motion in the sky.
[40] Robin Waterfield, p. 49.
[41] Ibid., p. 53.

Parmenides' achievements were of great and lasting significance. McKirahan credits Parmenides with "…introducing deductive arguments to philosophy and for acknowledging their compelling force, and for using this new tool to raise basic philosophical questions."[42] Furthermore, he set the intellectual agenda for those who came after him: the philosophers that followed in his wake had to come to terms both with his arguments and with the arguments of his student Zeno.

Zeno of Elea (ca. 490 - ? B.C.E.) was Parmenides' successor, and he developed forty paradoxes—which Aristotle would later try to refute—to prove that change and motion were unreal. Reason itself seemed to indicate that they were impossible. *Monism* is the philosophical position that only one fundamental substance exists, and if the monism of Parmenides outraged common sense, the paradoxes of Zeno were a veritable assault on it.[43]

"Marking the halfway point" is one example of a Zenonian paradox. It goes something like this: Suppose you want to walk over to a door. In order to reach the door, you must first reach the halfway point—i.e., you must walk half the distance from where you were to where the door is. And once you've done that, before you can reach the door, you must first reach the halfway point of the remaining distance, which is one-fourth of the original distance. And once you've done *that*, you must still reach another halfway point, which is one-eighth of the original distance. Indeed, since any distance, no matter how small, consists of two halves, you must cross an infinite number of halfway points to get where you're going. And as if that weren't enough, you must do so in a finite amount of time, or else you would never reach the door! The argument

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[42] Philosophy Before Socrates, p.157.
[43] Robin Waterfield, p. 69.

works just as well in reverse: Before you could reach a given point—call it P, if you like—you would first have to walk half the distance between you and P. And before you could do that, you would have to walk half of *that* distance, and so on to infinity. Before you could reach any given point, you would have to reach an infinite number of points, and so you could never start moving.

"Achilles' race against a tortoise" is a similar example. Naturally, Achilles gave the tortoise a head start. Despite his being a much faster runner, he could never overtake the lumbering tortoise. Before overtaking it he would have to get to the point where it used to be, and given that the tortoise is in motion it could not still be there, so Achilles would always remain behind the slowly plodding animal.

Zeno delighted in infinite regresses and a form of argument called *reductio ad absurdum*—the reduction of an assumption to absurdity. The above arguments for the impossibility of motion take this form. Since this argument form is very popular among philosophers generally, it is worthwhile to explain how it works. In a *reductio* argument one begins by assuming the opposite of what one wants to prove, and then shows that this assumption entails an absurdity. In the above arguments, since Zeno's argument is meant to show that motion is *impossible*, he began by assuming it was *possible* and argued that this assumption led to what he took to be an absurd result—namely, in the case of the "halfway point paradox," that one would have to traverse an infinite number of points in a finite amount of time. Showing that the assumption of a *reductio* entails something absurd proves that it cannot be true and establishes the truth of its opposite—such as, in the above arguments, that motion is impossible.

Zeno's paradoxes still intrigue thinkers to this day. It is agreed that there are more of his

paradoxes than those Aristotle tried to refute.[44] Contemporary analysis of Zeno's arguments has

depended upon the revolutionary work on infinite sets done by the mathematician Georg Cantor

(1845-1918),[45] who determined that there are infinities of different sizes (in contrast to Zeno,

who had assumed that all infinities were the same). Aristotle had argued that there was a

difference between infinities of divisibility and infinities of extent and argued that time can be

divided and extended the same way. According to Aristotle:

> [A]lthough it is impossible to make contact in a finite time with things that are infinite in
> quantity, it is possible to do so with things that are infinitely divisible, since the time itself
> is also infinite in this way. And so the upshot is that it takes an infinite rather than a finite
> time to traverse an infinite distance, and it takes infinitely many rather than finitely many
> nows to make contact with infinitely many things.[46]

Zeno's paradoxes not only helped Cantor, but also pointed the way to the theory of

infinitesimals—numbers that are infinitely small and yet greater than zero. These numbers were a

step along the way to the differential and integral calculus, discovered independently by

Gottfried Wilhelm von Leibniz and Sir Isaac Newton in the seventeenth century. (Modern

mainstream developments of calculus no longer invoke infinitesimals, preferring instead to use a

theory of limits developed mainly by mathematicians Bernard Bolzano, Augustin-Louis Cauchy,

and Karl Weierstrass, but the theory of infinitesimals is still alive and well in the branch of

mathematics known as "nonstandard analysis.")

[44]See Ibid., p. 70.

[45]William F. Lawhead, The Voyage of Discovery, p. 22. The great mathematician, Bernhard Riemann (1826-1866)
may also be mentioned.

[46]Robin Waterfield, pp. 75-6.

Melissus of Samos (dates unknown) was a general who defeated Pericles in battle in 441 B.C.E. He was also an Eleatic philosopher who argued, among other things, that what is, "The One", cannot have come to be, but has always existed. From this he concluded that it will also continue to exist for eternity, and that is infinite in its spatial extent.[47]

Melissus thought that Parmenides had proved the impossibility of a *void*, or *vacuum*, a place where nothing is. Matter requires a void for the possibility of motion. "If we were to see anything as it really is, we would see that it is unchanging; but our senses show us change, therefore our senses are unreliable."[48] Ironically, he introduced the notion of a void into Greek philosophy in the very act of arguing against it. In doing so, he helped pave the way for atomism, a theory about the constitution of matter which we shall discuss below.

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The Impact of Parmenides and Zeno

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Parmenides and Zeno caused a crisis in Greek philosophy, and forced a distinction between information that is based on *the senses* and information that is based purely on *reason*. Later philosophers who relied primarily on the senses for knowledge would come to be called *empiricists*, while those who relied primarily on reasoning would come to be called *rationalists*. Parmenides and Zeno also inadvertently forced a rejection of monism, because their philosophy showed that it led to conclusions that are *paradoxical*, because they are quite literally *beyond belief*.[49] Parmenides was a monist and monism is the belief that everything is one substance or reality. Dualists, like Plato, believe all being is composed of two kinds of stuff, for example mind and matter; pluralists believe many ingredients compose our reality.

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[47]See <u>Philosophy Before Socrates</u>, p. 292. See also pp. 296-8.
[48]R. Waterfield, p. 83.
[49]The etymological sense of the term, "paradox" is "*contrary to expectation and/or opinion*.

Empedocles (Died ca. 440 B.C.E.) of Acragas in Sicily is one example of a pluralist. He was the first to name earth, wind, water, and fire "the four 'roots,'" already understood in the sense of four elements. He described them as being uncreated, indestructible, eternal, and indivisible, just as Parmenides had described the unity of being. The simplest parts of these elements combine in different ways to form everything that exists. They were joined or separated by the primary forces of love and strife. Empedocles taught that earth, water, fire, and air, as the four roots of all being, could also be described using the names of divinities: Hera, the life-bearing mother, was earth; Nestis, water; Aidoneus (another name for Hades), fire; and Zeus, aether or air. Naming the four root elements in this way suggested that they had consciousness.

Aristotle later revived Empedocles' theory of the four indivisible root elements. It was to have a long and significant history ahead of it, and was associated especially with the theory of the four humors in medicine and with Hippocrates of Kos (460 BCE to 370), called the father of medicine, and later on with the great physician, Galen (129-199 or 217 CE). A bad mixture of body fluids was thought to bring about melancholic, choleric, sanguine, and phlegmatic conditions.[50] These classifications were both physical and psychological. The four-element theory was not replaced definitively until 1661, with the publication of the *Sceptical Chymist* by Robert Boyle.[51]

Empedocles wrote his theories in the form of an epic poem, much the way Parmenides did, choosing that tradition over the prose of natural philosophy. As a wonder-worker, after healing an incurably diseased woman, he was considered a god. To confirm what was being said about him, Empedocles jumped into the crater of the volcano, Mt. Etna. The mountain reportedly disgorged one of the bronze sandals he was always known to wear.

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[50]Waterfield, p. 134.
[51]Ibid.

Writing prophetically about reincarnation in his poem, he said that godhood proceeds in the progressive incarnation of prophets, singers of hymns, healers, and leaders. Because of his belief in reincarnation, he considered eating meat a crime and blood sacrifice a corruption. "One could not hope to be united with the sphere of love in itself...but perhaps one could aspire to be united with the power of love that remained in the world."[52] A person matures from one stage of existence to another. He promised Pausanias, his lover, that the latter would learn from him all manner of magical powers, including the ability to raise the dead. But Empedocles, like a natural philosopher, also promised Pausanias that he would learn from him knowledge of the origin and constitution of the world and, in contrast to Parmenides, he believed that a judicious use of the senses combined with a proper use of intelligence would lead to such knowledge. He also believed that thoughts about the world were likely to have the same constitution or structure as the world itself.

Empedocles disbelieved in the possibility of a *void*, or what we would call a *vacuum*. He thought that by "change"—that is, "generation" and "destruction"—no more was meant than the rearrangement of these four elements. The forces involved were love and strife: Aphrodite, as love, against the strife of wrathful divinities. Love tended to unify dissimilar things, whereas strife separated similar ones. There were four seasons or periods: one where love prevailed, like summer; one where strife prevailed, like winter; one in which strife passed over into love, like spring; and one in which love passed over into strife, like autumn. Time moved faster when strife increased, and slower when love increased, when elements merged into each other again. Different compounds were generated in each period. (Notice his anthropomorphization of

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[52]Ibid., p. 138.

nature.) His clear recognition of root-elements and compounds, however, represents an enormous

advance for science.[53]

Empedocles, as McKirahan says,

…sparkles like a diamond among the Presocratics—many-faceted and appearing different from different directions. A poet and a politician, a physician and a philosopher, a scientist and a seer, a showman and a charlatan, he was a fallen divinity who proclaimed himself already a god, and a visionary who claimed to control nature.[54] It has been well said that "the Hellenic mind has its romantic as well as its classical aspect, and both reach their climax without incongruity in the genius of this remarkable Sicilian.... Empedocles sums up and personifies the spirit of his age and race.[55]

Anaxagoras (ca. 500 - ca. 428 B.C.E.) of Clazomenae in Asia, a friend of Pericles, is the first

philosopher whom we hear about working in Athens. He was regarded an archetypal wise man

because he showed complete calm in the face of the death of his son, and also as an atheistic

philosopher because he showed no fear during a complete eclipse of the Sun.[56] He taught that the

Sun was not the god Helios, but an incandescent stone larger than the islands they inhabited.

What was in the heavens was considered perfect at the time, except they could not solve the

puzzle of the wandering stars, that is, the planets. Calling the Sun an incandescent stone would

later be a charge laid against Socrates in his trial.

Another good example of what natural philosophy did to mythology can be seen in the

story of Iris and the rainbow. The ancients believed that Iris, the goddess with golden wings,

swift as the wind, was sent by Jove from one end of the Earth to the other, with a pitcher in her

[53] Ibid., p. 136. This presentation of Empedocles relies heavily on Robin Waterfield, pp. 133-141. Interestingly enough, Empedocles' "Seasons of love and strife" brings to mind the idea of nature as the body of a god and love and strife as the emotions in that body. God's emotions are therefore considered the forces in nature, which are divine or personal. Empedocles' natural philosophy remains personal. He states that the "limbs of God were starting to quiver" and "gradually the lineaments of our familiar universe began to emerge." (Ibid., p. 137.)
[54] Philosophy Before Socrates, p. 290.
[55] Ibid. McKirahan is citing W. K. C. Guthrie, A History of Greek Philosophy, Vol. 2, Cambridge, 1965, p. 126.
[56] Waterfield, pp. 116-121.

hands with which she took water from the sea and poured it into the clouds in order to flood the Earth.[57] Anaxagoras, however, believed that the rainbow was caused by beams of sunlight that bounced off clouds that they could not penetrate. He is reported to have said, "What we call a 'rainbow' is light in the clouds shining opposite the Sun."[58] We would now explain how water droplets refract the Sun's white light into lights of different wavelengths, which we perceive as colors. Anaxagoras' reasoning took a step in the right direction, but he obviously undermined beloved contemporary beliefs.

Anaxagoras thought that the elements were really an infinite number of "seeds" composing the material universe, which was set into motion and given its form and order by a cosmic Mind, called *Nous* in Greek. Anaxagoras' seeds were modeled after biological seeds, but unlike those seeds—which had qualities like color, for example—his infinitesimal seeds had no qualities of their own but were mixtures containing a bit of everything. They contained all things in potential, and could become anything that existed.[59] Mind had set everything into a vortex of motion, becoming separated from inanimate things, but remaining in the living, sentient things. Sometimes "Mind," for Anaxagoras, must mean the mind of God setting the cosmos into motion, a vortex of motion in a small area ever spreading out. Sometimes it must mean but a splinter of God's mind, as in an animal or other living thing.

Taking the unity of Parmenides into account, Anaxagoras theorized that seeds had blended matter in them and became aggregates of "stuff," out of which everything was made— even human beings. All change was merely the manifestation of what had been latent in these

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[57]We might imagine that the arc of her movement as swift as the wind drew the rainbow across the sky. But in mythology she is the personification of the rainbow and rode across the sky on it. The myth does not really think in terms of causation, but in terms of narration. As the goddess of the rainbow she is Jove's messenger to mortals.
[58]Waterfield, p. 128.
[59]This may remind one of stem cells.

seeds. The original mixture or plurality could generate large structures of the *macrocosm*, that is, the great world or the universe, as well as microscopic entities (and he believed there were things that were infinitely small). Thus, even finite things could contain infinite mixtures: a seed, like a sperm or a microscopic egg, could contain an infinite number of ingredients with the potential to grow into a human being. "Air" seeds condensed into things of this world, while "aether" seeds formed the heavens and the heavenly bodies. If aether was trapped in the Earth, it would cause earthquakes; when it broke free it would reach its place in the heavens.

> The importance of Anaxagoras' thought lies partly, as Patricia Curd writes, in his

> attributing the motion of his ingredients to an external, independent, intelligent force... . Insofar as the causes of the operations of the heavens and the phenomena apparent to us from day to day are the same at both the macro- and micro-level (the rotations that cause the apparent motions of the stars are the same as those that govern the cycles of weather and life and death on earth), we can infer the nature of what is real from what is apparent.[60]

> These ideas—that the universe is the product of an intelligence of some sort, and can

hence be understood, that the heavens and the Earth operate according to the same principles, and that "we can infer the nature of what is real from what is apparent"—were all to become crucial factors in the rise of modern science. Along with some of the other Presocratics, Anaxagoras was in many ways a man far ahead of his time.

Leucippus and Democritus developed an atomic theory and are usually presented together. We do not know the date of Leucippus' death, but he was born ca. 460 B.C.E.; the dates of Democritus' life **we**re ca. 460 to ca. 370 B.C. Both were from Abdera in northern Greece, and

[60]Curd, Patricia, "Presocratic Philosophy", *The Stanford Encyclopedia of Philosophy* , Edward N. Zalta (ed.), URL = http://plato.stanford.edu/entries/presocratics/

both were *materialists* as well as *determinists*. A materialist believes that only matter is real.[61] A determinist believes that what happens in the present is determined, causally, by what happens in the past.[62] Given the state of the universe at a particular time, and given what we would now call the laws of nature, there is only one possible way for subsequent events to unfold. (Thus, if determinists are to believe in free will, they must deny that it involves the ability to make uncaused choices.)

The atomists rejected the idea of a cosmic mind. Atoms moved mechanically, by necessity (*ananké* in Greek). Parmenides had thought non-being could not be real, but these philosophers said it was: it was the void or vacuum, the empty space in which these atoms moved. (The Greek term for atom, *atomon,* means *uncuttable*. The ancient Greeks called them atoms because they were thought to be the smallest possible material things—they could not be divided or cut into smaller pieces.)

That this doublet of thinkers came up with minute invisible particles as the basic building blocks of the fundamental structure of the world, without microscopes and sophisticated science, is quite startling. How did they anticipate our own modern scientific position? They deduced this conclusion from Parmenides, mediated by the insights of Empedocles.[63] There must be, they reasoned, a plurality of indestructible elements, and all change must consist in a mixture of these elements. If what exists cannot move, then, since it is evident that there is movement, a void or

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[61]Another definition: "Materialism is the metaphysical position that claims matter as the only reality." From W. F. Lawhead, Voyage of Discovery, p. 376.

[62]Another definition: "Determinism is the metaphysical position that claims that every event (including human actions) follows necessarily from previous events." Ibid., p. 374.

[63]Frederick Copleston may have another explanation from Aristotle. In *De Anima,* Aristotle attributes to Democritus a comparison between "the motions of the atoms of the soul and the motes [particulates floating] in a sunbeam, which dart hither and thither in all directions, even when there is no wind. It may be that this was also the Democritean view of the original motion of the atoms," (according to Aristotle). Frederick Copleston, S.J., A History of Philosophy, Volumes 1-3, (New York: Doubleday, Image Books, 1946-1953), p. 73.

non-being must exist to allow for it. If change is apparent at the gross level of the senses, then realities at the unchanging level of things, of being and non-being—that is, the void or space—must be *insensible*, which means they are beyond what can be sensed. So the atomists posited a world in which there were two realities: atoms and the void.

Against Zeno, they argued that matter was not infinitely divisible, since otherwise it would ultimately be divided into parts without finite size. Against Anaxagoras, they argued that if one continued to subdivide wood, it would eventually cease to be wood. They made an intuitive leap of genius and concluded that, ultimately, the world was made up of things, i.e., atoms, that did not have qualities such as *being wooden*, though a particular aggregation of atoms, large enough for our senses to detect, did. At some point the indivisible particles (atoms) would have only size, shape, position and arrangement. Aggregations of atoms would have qualities. Atoms were the fundamental realities, and everything else was but transient and random concatenations of atoms.[64] The following quote sums up their philosophy rather nicely: "By convention sweet and by convention bitter, by convention hot, by convention cold, by convention color: in reality atoms and the void."[65]

Xenophanes (ca.560 - ca. 478) of Colophon, a town in Asia Minor, was the first critical *theologian*—that is, one who thinks systematically about God—as well as a poet who criticized the Homeric mythology of the gods. He criticized traditional beliefs about the Greek gods because he thought they depicted the gods as engaging in immoral behavior. He also rejected anthropomorphic tendencies in Greek thought, and said that the gods did not physically resemble

[64]Ibid., pp. 164-6.
[65] (68B125 = B9, quoted in "Presocratic Philosophy", Stanford Encyclopedia of Philosophy, http://plato.stanford.edu/entries/presocratics/, last accessed 9/21/10

human beings. He believed in a God or divine force that pervades the universe, and implied that "God is not immoral or responsible for evil, is not anthropomorphic, is eternal, self-sufficient, independent and master of everything, and unmoving."[66] The universe is governed and unified by this divine being by means of this being's active will, which proceeds from the being's insight.[67] Xenophanes also noted that "the gods did not reveal from the beginning all things to us; but in the course of time, through seeking, men find that which is better."[68]

Xenophanes was one of the first to use empirical evidence to support his views. According to McKirahan he is also "the first Presocratic to reflect on the frailty of our ability to gain knowledge." He calls Xenophanes the "father of epistemology"[69] (the philosophical study of knowledge). McKirahan writes:

> Together with his contemporary, Heraclitus, Xenophanes introduces concerns about method and the theoretical limits of human knowledge, which altered the course of Presocratic thought from speculating about nature to theorizing about the basis for such speculation. In this change of direction we have, in an important sense, the birth of Western philosophy.[70]

The Sophists

Sophists emphasized rhetoric over logic and were somewhat like modern lawyers in their emphasis on advocating effectively for propositions in which they did not necessarily themselves believe. As negatively as the Sophists are presented—owing to the fact that they were Plato's and Socrates' enemies—they made some positive contributions to philosophy, much as lawyers today

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[66]Philosophy Before Socrates, p. 62.
[67]Ibid., p. 64.
[68]Richard Tarnas, The Passion of the Western Mind, p. 25. Also see Robin Waterfield, p. 30.
[69]Philosophy Before Socrates, p. 66.
[70]Ibid., p. 68.

contribute to the apportionment of justice by providing effective representation to their clients. Many were skilled politicians who believed that politics could be taught and thereby contributed to democracy by opening the door to those who were not from noble and elite families. Sophists turned the attention of philosophers away from the cosmos and focused on human beings themselves as objects of interest.[71]

Protagoras (ca. 490 - ca. 422 B.C), also of Abdera, and the founder of the Sophist movement (in)famously said, "Man is the measure of all things, of things that are, that they are, of things that are not, that they are not."[72] This statement is generally considered *subjectivist*, meaning that truth resides in the mind's thoughts and feelings rather than in the knowledge of objects themselves. When taken metaphysically, his subjectivism becomes problematic. Suppose two people are walking in a strong wind; one says, "The wind is cold," and the other says, "The wind is warm." The first is true for the one, and the second is true for the second. Both are right. There is no such thing, according to Protagoras, as the objective temperature of the wind. There is no false answer for this subjectivist turn of mind. (They did not have thermometers in those days, of course—although, even if they had, the relation of objective physical temperature to subjective feelings of heat and cold would have posed difficult issues of its own, as it does today.)

Now, if one person sees a second person put poison in the drink of a third person, and warns this person about it, this third person can put his cup to his lips and say: "He did not put poison in my drink. I *know* he did not." If Protagoras is right, and truth is completely subjective, then there will not be poison in the third person's cup, because it is his opinion that there is not—

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[71]Donald Palmer, <u>Looking at Philosophy, 3rd Edition</u>, (New York: McGraw Hill Publishers, 2001), p. 49.
[72]W. F. Lawhead, <u>Voyage of Discovery</u>, p. 31.

even if he keels over, turns green, and dies a nasty, brutal, and cruel death. In matters of right and

wrong, a person can speak about subjectivity, but could prove to be dead wrong.

Protagoras wanted to speak, not of metaphysics (or *physis*, as it was called at that time),

but of *nomos*, that is, law or convention—the way reality appears to a person or a group of

persons. The laws of a society had to be relative and appropriate to it, and a single law might not

be valid for all societies and cultures. Thus Protagoras has more to say about matters like truth

and falsity—between two political parties, for example—where it is not so easy to judge who is

right and who is wrong. Aspects of one position may be quite right and others quite wrong and a

conflict of interests—not in the ethical sense, but in the sense of opposing interests of two

classes—might have to be taken into account. According to Protagoras, it is not (or need not be)

the case that one side is right and the other wrong, one true and the other false. Neither of these

(apparently) conflicting social perceptions is false, nor do they really contradict each other. Some

positions were more helpful or better than others, however, and the art of politics that the

Sophists taught played a role in learning it.

Protagoras taught rhetorical skills that helped a tuition-paying student learn to argue both

sides of an issue so well that he could make the weaker argument defeat the stronger one. This is

another charge that was later to be made against Socrates, even though he strongly opposed the

Sophists in this regard and did not place rhetoric over logic. Protagoras said, "If we cannot be

certain about the truth of a matter, then we are justified in arguing either side of the case."[73] He

considered the ability to do so a virtue, a form of expertise appropriate to the art of politics. His

view that politics and citizenship could be learned was at least somewhat more democratic and

[73]Robin Waterfield, p. 211. In this author's whole section on Protagoras, pages 205-211, he seems to be intent on rehabilitating this Sophist. But in the opinion of the present authors, the skepticism, agnosticism, and subjectivism of Protagoras still end up being somewhat negative and problematic.

universal than the alternative view that only noble families could properly participate in governance—although only the rich could afford his tuition fees.

In focusing on human beings as the measure of all things, Protagoras held *nomos*, that is, custom and law, to be more important than *physis*, the objective realities of nature. He believed Democritus had shown that nothing could be known for certain, and Protagoras intensified Democritus' skepticism, holding that no one could be wrong or have a false position. Whatever standard of justice (*nomos*) a state establishes for itself is good for as long as it remains in force. There is no objective standard of justice; it is relative to each community.[74] Still, Protagoras taught that it is wiser for a politician to substitute a better or more beneficial condition for a worse one.

Gorgias (ca. 483 - ca. 375 B.C) of Leontini in Sicily, taught that (1) nothing exists; (2) if anything did exist, no one could know it; and (3) if anyone did know it, no one could communicate it to anyone else. The point was, according to Donald Palmer in Looking at Philosophy, that "if you could prove these absurdities you could prove anything."[75] Notice, however, that Gorgias involves himself in a practical contradiction: he is able to communicate his own nihilism quite effectively, even though on his own theory he should not be able to do so.

In any case, his purpose was persuasion; he was a teacher of *rhetoric*, a subject which was central to the interests of the Sophists. If words can get into people's hearts and move them, that is no small matter. But in one speech, Gorgias mounted a sustained assault on responsibility just to amuse himself.[76] He strove to move people with speeches that were skillfully composed,

[74]Ibid., p. 210.
[75]Donald Palmer, p. 41.
[76]Waterfield, p. 231.

whether or not they were honest.[77] In the same speech, he compared words to drugs that cause distress, pleasure, fear, and other emotions. And in keeping with the worst tradition of rhetoric, he noted that "thought is banished by persuasion."[78] The heart of his outlook was that since people cannot know how things are, the object of rhetoric is to replace their opinions with one's own. (One can see why Socrates took offense.)

Thrasymachus of Chalcedon (459-400 BCE) taught that might makes right. Justice, for him, is nothing other than the advantage of the stronger party.[79] Justice is also, he held, the promotion of someone else's good, although this latter statement might seem to contradict the former. Thrasymachus attacked conventional morals and is sometimes considered an *ethical nihilist*, that is, an extreme kind of skeptic, who denies the existence of objective ethical truths and objectively existing moral values, or the possibility of objective knowledge of such values. (The first alternative, that there are no ethical truths or moral values, of course entails the second, that one cannot have knowledge of them, but the converse is not true: it might be the case that there were objective ethical truths even though we could not know them.) He states that only a fool would adhere to the norms of Greek culture, since they bring no advantage to oneself. Later, such norms would be thought to require argued justification; according to Robin Waterfield in his book, *The First Philosophers: the Presocratics and the Sophists*. Socrates of Athens—or rather Plato, his student—would attempt to provide such justification in the following century.[80]

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[77]Ibid. p. 230.
[78]Ibid., p. 229.
[79] The history of indigenous people in many nations and among nations around the world, however, really reflects the injustice and lack of ethics that Thrasymachus blatantly supports.
[80]Ibid., p. 271.

Concluding Thoughts on the Presocratics

Our account paints the first philosophers with quite a broad brush. It seems that Heraclitus was considered a prophet, Parmenides wrote his philosophy in epic poetry, and Empedocles jumped into the crater of Mt. Etna to prove he was a god. They seem to have had *mythos* in their *logos* in the same way that Isaac Newton had theology and mysticism in his physics.

In Greek philosophy, the Presocratics can be thought of as having an impact on subsequent thinkers similar to the impact that modern thinkers such as Newton, Darwin, Nietzsche, Marx, and Freud had on those who came after them: they brought confusion, skepticism, determinism, and materialism in their wake. In *The Passion of the Western Mind*, Richard Tarnas notes that before Socrates, with the exception of the Pythagoreans, Hellenistic philosophers followed a definite, if at times ambiguous, direction "away from the supernatural and toward the natural; from the divine to the mundane, from the mythical to the conceptual, from poetry and story to prose and analysis."[81] Heraclitus expressed something close to this view of the universe when he said that the Cosmos has not been made by gods or humans, but that it always has existed, does exist, and always will exist.[82]

Undoubtedly, something was gained from this change of direction: Both we and the ancient Greeks came to have a more accurate understanding of the physical world, which for us has led to the many advances in medicine and technology whose benefits we now enjoy. Yet something might also have been lost in the transition. Having come to understand nature so well,

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[81]Richard Tarnas, The Passion of the Western Mind, p. 24.
[82]This is our paraphrase of fragment 10.77, quoted in Philosophy Before Socrates, p. 124.

many no longer feel awed by its power or have respect for it its beauty, but view it instead as something to be mastered or manipulated, and not for the benefit of sentient beings or even human beings generally, but for those few with enough power to do whatever they wish with it. Arguably, a growing acquaintance with human biology and psychology has caused some to view their fellow human beings in a similar light. It may be that we have collectively abandoned the pursuit of wisdom for the pursuit of knowledge, forgetting that knowledge can be used just as easily for destructive purposes as beneficial ones if it is not tempered by wisdom. The philosopher Socrates, whom we shall learn about in the next section, saw this far more clearly than those who came before him, and brought about a shift in the focus of philosophy from understanding nature to bettering one's soul. If what we have said in this paragraph is on the right track, we would be wise to follow his example.

Greek Philosophical Vocabulary

Adiaphora: Outside moral law. Apatheia: Equanimity. Apeiron: Boundlessness.

Arche: First cause. Arete: Excellence. Ataraxia: Tranquility. Demiurge: Creator.

Doxa: Common opinion. Dunamis: Potentiality. Energeia: Actuality.

Episteme: Knowledge. Epoché: Suspension. Ethos: Character. Eudaimonia: Flourishing.

Henosis: Oneness. Katalepsis: Comprehension. Logos: Reason. Nomos: law or convention. Nous: Intellect. Pathos: Appeal to emotion. Phronesis: Practical wisdom. Physis: Nature. Sophia: Wisdom.

Interlude No. 1

A Brief Introduction to Arguments

What is it to think rationally? By the time you've finished reading our book we hope to have provided you with an answer to this question. We shall begin in this Interlude by examining the notion of an *argument*. An argument, as we shall understand it, is not a heated dispute between two or more people; neither is it a more civil exchange between people with opposing views, as political debates are ideally supposed to be. Instead, we will regard an argument as a sequence of *sentences*.

Not just any sentences will do, though. The sentences being considered here are *declarative* sentences, as opposed, for example, to *interrogative* sentences—questions—and *imperative* sentences—commands. For the sake of brevity we will henceforth call declarative sentences *statements*.[83] Unlike questions and commands, statements say something about the world. That is, they represent things as being a certain way, and are true if things are that way and false if they are not. So if one says that a certain cat is lying on a certain mat, one has made a statement, and what one said is true if the cat is lying on the mat, and false if it is not. In this respect statements differ from questions, promises and commands. Questions may have right or wrong answers, promises may be kept or broken, and commands may be obeyed or disobeyed, but these types of sentences are neither true nor false in the way that statements are.[84]

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[83]Sentences are to grammar what statements are to logic, and what speech acts are to the philosophy of language.
[84]In the philosophy of language, promises and commands are *performative speech acts*, the intentional expression of which constitutes the action designated by the verb. For example, when a priest, pastor, or legally authorized official says "I now pronounce you partners for life" to a couple, in the right circumstances, and given that certain

Arguments, then, are sequences of statements. An argument consists of a set of one or more *premises*, statements that are supposed to give support for a further statement which is called the *conclusion*. Consider the following argument, a variant of what is probably the oldest and most widely cited arguments in Western philosophy:

All humans are mortal.

Socrates is human.
_____
Socrates is mortal.

In this argument, the first two statements are the premises and the last is the conclusion. The line serves the purpose of marking off the premises of the argument from the conclusion. The premises give support to the conclusion in the sense that they *entail* it. We say that the premises of an argument entail its conclusion when it is impossible for all the premises to be true and the conclusion to be false. The idea of entailment doesn't apply only to premises and conclusions; in general, it can apply to any statements or sets of statements, whether they can be thought of as being premises or conclusions or not. The only requirement is that one statement is entailed by another statement—or set of statements—whenever it is impossible for the entailed statement to be false while the entailing statement(s) is (are) true. In our sample argument, it is impossible for all humans to be mortal and for Socrates to be human, and for it also to be the case that Socrates is *not* mortal. It is important to realize that when we say that *all* humans are mortal we do *not* mean that the vast majority of humans are mortal, while failing to mention certain exceptions because they are few and far between. We mean that *every single human* is mortal, *period*. That being so, if all humans are mortal and Socrates is human, Socrates *must* be mortal. Hence, if it

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background conditions are met, he or she brings it about that the couple are now married in virtue of uttering that performative sentence. In this case, the verb 'pronounce'" as it occurs in that sentence designates the action that the sentence constitutes—namely, *pronouncing* the couple marriage partners for life.

turns out that Socrates is *not* mortal, it follows that either not all humans are mortal, or that Socrates is not human, or perhaps both. Arguments such as this, in which the premises entail the conclusion, are called *valid*. If, in addition, all of the premises of a valid argument are true the argument is also called *sound*. Since, by definition, all sound arguments are valid and have true premises, all sound arguments also have true conclusions.

A word of caution is in order. Under no circumstances should you call an argument *true*. Philosophers do not talk that way, and speaking of arguments as "true" runs a risk of confusion. You might mean that an argument is *valid*, or that it is also *sound*, or perhaps only that its premises and conclusion are all true. Regarding this last possibility, it is important to note that an argument may have all true premises and a true conclusion while being invalid, unsound or both. Consider the following argument:

Most basketball players are over five feet tall.

The Moon orbits the Earth.

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Aristotle was a philosopher.

All three of these statements are true. Nevertheless, the premises of this argument do not entail the conclusion. Most basketball players could still have been over five feet tall, and the Moon could still have orbited the Earth, even if Aristotle had chosen to be a fisherman instead of a philosopher. Thus both premises of this argument could have been true even though its conclusion was false, and it is therefore invalid and unsound.

An argument that is unsound may still be valid, but one or more of its premises must be false; if they were all true, the argument would be sound after all. When an argument is both valid and unsound, its conclusion may or may not be true. An example of a valid but unsound argument is:

If the Earth is flat then the Earth doesn't have an equator.

The Earth is flat.

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The Earth doesn't have an equator.

In this case the first premise is true, the second premise is false, and the conclusion is false.

We shall now introduce two other logical notions, those of *consistency* and *inconsistency*. While they do not directly concern arguments, it is important for you to become acquainted with them. A set of statements is *consistent* if it is possible for all of the statements that compose it to be true together. Correspondingly, a set of statements is *inconsistent* if it is *not* possible for all of the statements that compose it to be true together. Alternatively, we can understand consistency and inconsistency in terms of entailment: a set of statements is consistent if no member of the set, or multiple members taken together, entail that any member of the set is false; otherwise the set is inconsistent.

To make these notions clear, consider the following set:

1. No man is both tall and fat.

2. Chris is tall.

3. Chris is fat.

4. Chris is a man.

It doesn't take much thought to realize that this set is inconsistent. If Chris is tall, fat, and a man, then some man is both tall and fat, which is precisely what statement (1) denies. So statements (1)-(4) cannot all be true and are inconsistent by the first definition of inconsistency. The set consisting of (2)-(4) entails that (1) is false, and (1) entails that at least one of (2), (3) and (4) is

false, although it is consistent with any one of them taken by itself, and also with any two of them taken together. So the set is also inconsistent by the second definition.

Now consider this set:

5. Jones is sitting and Jones is not sitting.

6. All whales are mammals.

7. Mt. Everest is the world's tallest mountain.

This set is also inconsistent by either definition of 'inconsistent'. The reason is that (5) cannot be true—provided we understand it as saying that Jones is both sitting and not sitting *at the same time*. Since (5) cannot be true by itself, it cannot be true together with (6) and (7) either. Furthermore, because (5) cannot be true, every statement entails that (5) is false, including (5) itself! Recall that one statement entails another when it is impossible for the former to be true while the latter is false. Since (5) cannot be true, it is necessarily false. So the statement "(5) is false" is necessarily true, and no statement can be true while *it* is false, for it is necessarily true. Thus every statement entails the statement "(5) is false", and by extension every statement entails the falsity of (5).We may say that (5) is *self-inconsistent*. Any set of statements that contains a self-inconsistent statement is also inconsistent, even if all the other statements in the set are consistent with themselves and each other.

Exercises

Now that you have a basic understanding of rational argumentation, you are ready to attempt the following exercises:

(1) Melissus' argument for the eternity of the world could be reconstructed as follows. Using the letter x as a variable—much like the variables used in algebra, except that x can stand for anything, not just numbers—we have:

Necessarily, if x came to be, then before x came to be, x was nothing.

If x was nothing, x could not have come to be out of nothing, since nothing can come to be out of nothing.

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Thus, if x exists, it did not come to be.

Assume for the sake of this exercise that the above reconstruction is accurate. Do you think the argument is valid? Explain your answer. If you think it isn't valid, try to describe a situation (whether actual or hypothetical) in which the premises are true and the conclusion is false. If you think the argument is valid, do you think it is also sound? Again, explain your answer. What reasons do you have for thinking that the premises are true or false?

(2) Give your own (brief) reconstruction of Zeno's "paradox of the halfway point," being sure to identify the premises and the conclusion. As in the last exercise, explain why you think the argument is valid or invalid, and if valid, why you think it is sound or unsound. If you believe that it is invalid, can you think of any way to modify it to make it valid? Once more, explain your answer.

(3) Construct an argument of your own, and which you believe to be valid, preferably for a conclusion which is relevant to philosophy. In any case, be sure to identify the premises and the conclusion. Have someone else assess your argument's validity, and ask him or her to explain why it is valid or invalid. If he or she thinks it is invalid, ask him or her to describe a possible situation in which all of its premises are true and its conclusion is false, and whether there is any way of altering it to make it valid.