

## The Cognitive Science of Presocratic Metaphysics

### Philosophical Theories and Folk Theories

Western philosophy emerged in the sixth century B.C. on the Ionian coast of what is today Turkey. The entire enterprise of philosophical inquiry was largely defined by its origins. That enterprise sought a rational account of the nature of reality. That is, it sought to answer the question “what is real and how can we know it?” It wanted to discover fundamental principles that could explain how things could come into being, why they have the properties they do, and why they behave as they do.

What we intend to show is that the enterprise of metaphysics was, and still is, based on folk theory and metaphor. It is our claim that philosophical theories are attempts to refine, sharpen, and make consistent certain common metaphors and folk theories shared within a culture. Philosophical theories, therefore, incorporate some collection (perhaps in more precise form) of the folk theories and metaphors that define the culture that they emerge in. To the extent to which this is true, the metaphysical claims made by any philosophy cannot be absolute truths, even though philosophers tend to treat them as such. They are instead attempts to comprehend experience imaginatively via metaphors and conceptual frames. We will argue that what holds for Presocratic metaphysics holds for philosophy as a whole, namely, that it is a fundamentally imaginative enterprise.

As we shall see, the Presocratics are an especially important place to start doing the cognitive science of philosophy. These philosophers, despite their different views, shared folk theories and metaphors that came to define not merely the enterprise of metaphysics, but the very nature of philosophical inquiry. The essentials of the Presocratic paradigm have been definitive of much of philosophy since that time. Moreover, they have spread from philosophy to other academic disciplines. They need to be understood.

Cognitive semantics has given us important new tools that will allow us to provide a conceptual analysis, not only of Presocratic metaphysics, but of philosophy in general. The tools are very different in nature than those that philosophers have been trained to use in analyzing their own tradition, and they allow us to shed new light on it.

The kind of analysis we will be doing is not classical text interpretation. It is instead typical of the kind of empirical analysis done in cognitive science. It attempts to account in detail for regularities governing the unconscious inferential structure on which the comprehension of texts is based. It uses the analytic tools discussed above: prototypes, frame semantics, metaphor, etc. And, as is common

in cognitive science, it pays special attention to what is not overtly and consciously discussed in the text, but rather to what must be unconsciously taken for granted in order to make sense of texts.

Our analysis is thus in one way like what is called "rational reconstruction" in that it gives the details of what has to have been assumed to make sense of a position. It is, however, unlike classical versions of rational reconstruction in several ways: First, rational reconstruction classically assumes that the reconstruction is done wholly within classical logic, whereas we assume that it is done with general cognitive mechanisms such as prototypes, metaphors and folk theories. As such, it is constrained by empirical studies of the nature of cognition, rather than simply assuming a priori that logic is the correct mechanism. Thirdly, as cognitive scientists, we seek generalizations, both synchronically and diachronically.

Thus, we will look for generalizations about which folk theories are shared by most Presocratics, and which persist over time. In seeking generalizations, we are therefore seeking minimal set of folk theories and metaphors that define the specific metaphysical positions and which best generalize to all the positions considered. In the analyses we will be giving, we will make constant use of these criteria. As a result, our arguments, which will seem pedestrian to a cognitive semanticist, may seem unusual to philosophers, who employ none of these fundamental criteria from the cognitive sciences in their argument forms. As a result, we will be producing analyses that go beyond what classical rational reconstruction can do. In addition, we are implicitly challenging the traditional method of rational reconstruction as not being empirically valid, since it fails to meet these criteria.

As we shall see, the most striking aspect of our analysis is the conceptual system -- especially the folk theories and metaphors -- that are required to make sense of what is said. What is striking is not just what the metaphors and folk theories are, but how stable they are -- even over millenia. Moreover, we will see that the unconscious and implicit folk theories and metaphors behind Presocratic philosophy are later consciously refined, analyzed, and proposed as deep philosophical truths, without any recognition of their folk-theoretical and metaphorical character.

The Presocratic philosophers we will be discussing are Thales, Anaximander, Anaximenes, Parmenides, Zeno, the Pythagoreans, Heraclitus, the Atomists and the Sophists. They represent not only the fundamental doctrines of Presocratic metaphysics, but also the basic types of metaphysical positions that have been dominant in the West.

What characterizes these metaphysicians as a group is their search for an account of "Being" as a hidden truth that underlies the kinds of changeable

phenomena that we perceive. As we shall see, their answers to the question of the nature of Being range from material substance, like water or atoms, to abstract forms like numbers or patterns of flux, to the Sophists' view that Being is defined by community standards.

Despite the variety of their answers, all of these metaphysicians shared a remarkably large number of folk-theoretical assumptions, many of which persist to the present day. These shared folk theories make it possible to ask the question "What is Being?" and put constraints on the possible answers.

The question "What is Being?" is bound to strike most nonphilosophers as extremely odd. We do not, after all, see ourselves as experiencing "Being" and requiring views of what it is. Rather, we experience chairs and trees and people and language and human actions and natural events. Why should perfectly rational and extremely intelligent people concern themselves with something like "Being", and what set of assumptions make it a real, pressing, and even all-important problem -- to some, like the Pythagoreans, a matter of life and death?

### The Folk Theories Of Presocratic Metaphysics

#### Folk Theories of Essence

##### 1. The Folk Theory of the General and the Specific:

Every specific thing is an instance of a more general kind of thing.

##### 2. The Folk Theory of Essences:

Every entity has an "essence," that is, a collection of properties that makes it the kind of thing it is.

##### 3. The Folk Theory of Natural Behavior Patterns.

Particular changes, processes, and actions are instances of general patterns of change and activity.

Such patterns can have the status of essences of entities. Thus, entities, by their nature, will typically change and act in patterned way. The specific behaviors of a particular entity will typically be instances of general patterns of behavior that define the kind of entity it is.

#### **4. The Folk Theory of Categories:**

**Categories are defined by collections of essential properties.**

#### **5. The Folk Theory of the Hierarchy of Categories:**

**All categories are hierarchically ranked, with more general categories above the more specific.**

**This collection of folk theories outlines a view of the world. By (1), specific things and events are not isolated occurrences. They are always instances of something more general. What is general is defined by properties shared by things and events. Thus, a specific leaf falling in a specific way is an instance of leaves-in-general and its falling is an instance of falling-in-general. Not only are specific objects and events real, but their general properties are real too.**

**By (2), the properties of an object are grouped into two collections: the essential properties and the accidental properties. If the accidental properties change, the object remains the kind of object it is. If the essential properties change, then the very nature of the object changes and it becomes a new kind of object. Essential properties, being general properties, are real. Essences are existing entities.**

**According to (3), the behavior of things, on the whole, is not erratic, but follows from the the general properties that things have. Leaves will behave as leaves; they will fall in autumn. Idiosyncratic behavior is a consequence of properties not shared with anything else.**

**From (2) and (3) it follows that the changeableness of the sensible world is a consequence of the unchanging essential properties of things. For example, the growth of an acorn into an oak involves a sequence of changes that is a consequence of the nature of acorns. Thus, nature is a dynamic, active process by which individual things become what it is their nature to be.**

**Each category in the hierarchy of categories is defined by essential properties shared by every entity in the category. Members of lower categories have each of these general properties, plus other specific properties. The hierarchy of categories is, therefore, not just a feature of the way we conceptualize the world; it actually exists objectively in the world. Since each category is defined by an essence, and since each essence is an existing entity, there is a hierarchy of essences corresponding to the hierarchy of categories. Moreover, the behavior of specific things in the world is not arbitrary, but instances of general behaviors that flow from the essences that define the categories in the heirarchy.**

## The Category of Being

### 6. The Folk Theory of The All-Inclusive Category:

There is a category at the top of the hierarchy, to which all other categories belong.

This is the Category of Being, the highest category of all things that exist. As a category, it must also be defined by a list of essential properties shared by its members. The members of this category are all the existing objects. They all, therefore, must have one or more essential properties that they share by virtue of their very existence. Thus, just as all wooden objects share the essential property of woodenness, so every object that exists shares the essential property of being ("isness").

Within the Category of Being, is an Ontology, a collection of the sub-categories of Being, that is, a set of the specific kinds of thing that exist.

### 7. The Folk Theory of Reality:

The defining essence of the Category of Being ("The Essence of Being") defines what it means to be real.

### 8. The Folk Theory of Degrees of Reality:

The essence that defines the Category of Being defines reality itself. It is the Essence of Reality. It is therefore the realest thing there is. It is also the highest essence in the hierarchy of categories. Consequently, the higher in the hierarchy of categories that an essence is, the closer it is to the Essence of Reality, and hence, the realer it is.

From (1), (7) and (8), it follows that specific physical objects are less real than the abstract general properties (or abstract ideas) that define higher-order categories. Thus, the idea (or "essence") of a chair has more reality than any specific chair. This consequence of (1), (7) and (8) was refined not by the Presocratics, but later, by Plato.

Incidentally, (8) -- the idea that there are degrees of reality -- is a consequence of (1) - (7) plus two common conceptual metaphors: SIMILARITY IS CLOSENESS and LINEAR SCALES ARE PATHS. SIMILARITY IS CLOSENESS can be seen in expressions such as "Redwoods are closer to pines than to oaks," and "My jeep is far from a Cadillac." LINEAR SCALES ARE PATHS can be seen in expressions such as "John's intelligence goes beyond Bill's", "John is way ahead of Bill in math" and "It's far hotter in here than outside."

The metaphorical logic that produces (8) is as follows: In the hierarchy of categories, higher categories are closer to the highest category than are lower categories. That is, there are paths of categories from lower to higher, leading up to the highest category, which is the end point on each path. By the Linear Scales Are Paths metaphor, each path up the category hierarchy is a linear scale. Since their end points are Reality, each is a scale of realness. Since Similarity Is Closeness, the essences defining higher categories are realer (more similar to Reality) than the essences defining lower categories.

Notice that all consequences about the existence and nature of Being flow from the Folk Theory of the All-Inclusive Category, which presupposes (1) - (5). It is that folk theory that is at the heart of the concept of Being.

### Folk Theories of Knowledge

#### 9. The Folk Theory of Sufficient Reason:

There is a rational explanation that we can understand (at least partially) as to why things are they way they are.

This is equivalent to:

#### 9'. The Folk Theory of the Intelligibility of Being:

Reality is not ultimately absurd, but has some kind of rational structure (the 'logos') that we can grasp.

#### 10. The Folk Theory of The Value of Knowledge:

The more control over nature some knowledge gives one, the more valuable it is.

By (1) and (3), more general knowledge permits one to predict more about the behavior of things than more specific knowledge. Thus, more general knowledge permits more control over nature, and by (10) is more valuable. In addition, it implies (10') which states that purely specific knowledge (that which is not generalizable to anything else) is of no value at all, since it allows one to predict nothing and hence to control nothing.

#### 10'. The Folk Theory of Knowledge of Universals:

The most important knowledge is knowledge of the general not knowledge of particulars as such. Particulars are interesting only insofar as they are instances of more general phenomena.

For the Presocratics, the point of gathering knowledge was to have some measure of control over their lives. In order to get such knowledge, they needed

to know what made things act as they did. By (3) -- the Folk Theory of Natural Behavior -- getting such knowledge meant grasping the essences of things so that they could predict their behavior. Idiosyncratic knowledge, knowledge of particulars that had no general import, was useless for their purposes. This view has largely persisted throughout the Western tradition.

#### 11. The Folk Theory of Deductive Knowledge:

Knowledge of the specific follows from knowledge of the general.

The purpose of gathering general knowledge is to reason from it so that one can draw conclusions about more specific cases. Note that it could be the case that knowledge of the general is just what is in common among knowledge of previous specific cases, but it need not extend to future cases. This possibility was rejected as not being real knowledge.

It follows from (11) that the most important knowledge that one could have is Knowledge of Being, since that is the most general knowledge -- it is knowledge about everything. It is (11) that makes metaphysics the most important undertaking in philosophy for the Presocratics, since it would give us the highest form of knowledge attainable -- knowledge from which all other knowledge flows.

This view is still with us today. Consider those physicists who are materialists, that is, who believe that all Being (all that exists) is material in nature. Physics is the study of the ultimate nature of matter. Therefore, a unified physical theory would be a theory of all matter, and by (11), a Theory of Everything, since all specific knowledge would follow from knowledge of the most general. Philosophical discussions that assume that a general physical theory would be a Theory of Everything therefore make use of (11).

#### 12. The Folk Theory of the Stability of Knowledge:

If you have general knowledge about something, that knowledge doesn't change.

#### 13. The Folk Theory of Knowledge of the Real:

Knowledge is knowledge of something that really exists.

The folk theories of knowledge, if true, would guarantee that we could acquire a rational understanding (at least a partial one) of what is real. They further constrain the form of any acceptable account of the real, namely, that it must provide general, eternal truths, that is, universal unchanging truths about an unchanging reality. From these general, eternal truths, specific truths could be deduced.

#### 14. The Folk Theory of The Changeableness of Sensible World:

Everything that we experience through our senses is unstable and changing.

Things come into existence, change, and pass out of existence. These are the things that we experience through our senses. But we can only perceive specific things, and our knowledge of specifics in themselves is unimportant. What is important is general knowledge based on essences of things that will permit us to characterize the general principles governing behavior.

The realm of sense experience is thus a "Realm of Becoming," since things as we experience them via our senses come into being and pass out of being, and their properties can change over time. Therefore, knowledge about the real cannot be knowledge about the Realm of Becoming. That is, knowledge of the real cannot be about sense experience. Knowledge can only be about what is stable and unchanging that lies behind our sense experience. This is called "the Realm of Being."

#### The Task of Metaphysics

Knowledge of Being is knowledge about everything. It is therefore the most general knowledge that one could have, and furthermore, by (10) ii is the most valuable knowledge that one could have. The search for the knowledge of Being is therefore the ultimate intellectual endeavor. Metaphysics, as conceived of by the the Presocratics, is the search for knowledge of Being.

But Being, as we have seen, is definable and makes sense only relative to the fourteen folk theories discussed above. The most crucial of these are the Folk Theory of Essences and the Folk Theory of the All-Inclusive Category, without which Being could not even be characterized. Indeed, many of the anti-metaphysical philosophies of the 20th century are defined by their denial of the validity of these folk theories. And as we shall see below, the results of cognitive science that we are focussing on in this book are inconsistent with most of those folk theories.

#### The Strategy of Metaphysics

Since everything in our sense experience is ephemeral and changeable, while Being is eternal and unchangeable, the Presocratics concluded that knowledge of Being could not based solely on sense experience. Moreover, Being was assumed to be rational and hence understandable. Since it could not be understood in terms of itself, it had to be understood in terms of something else that was more comprehensible.



One possibility that, as we shall see, is taken up by the Milesian nature philosophers and the Pythagoreans is that Being shows itself more clearly in some phenomena than in others. The strategy of metaphysics is to comprehend Being in terms of those phenomena where the Essence of Being is most evident. Another possibility, taken up by Parmenides and Zeno, is to deny that Being shows itself in any phenomena at all, and thus to look to reason alone as a means of gaining knowledge of Being. But in all these cases, the general strategy is to find something else that is more directly grasped and better understood in order to understand Being.

### The Presocratic Metaphors

Presocratic metaphysics set forth a small number of basic views about the nature of being. Each of them is embodied in what we can now see as a metaphor, but which was believed by their proponents to be a deep truth.

The metaphorical character of each of these metaphysical programs becomes apparent once one sets out the full range of views about the nature of Being, that is, the Real. Each view rests on an assumption of the following form:

The Real (Being) shows itself most fully in phenomena of kind X, where X is fairly well understood. Since Being is assumed to be uniform across all things, X -- the phenomena where Being shows itself most fully -- can be used to understand Being in general, via a metaphor of the form:

The Real is X.

Each "The Real is X" statement is a way of understanding something general, namely Being, in terms of something specific, some particular form of Being. Each of these is a conceptual metaphor, and is an instance of the Generic Is Specific metaphor schema.

### Being is a Conceptual Creation

The target domain, Being, is a *conceptual creation*, a product of the Folk Theory of the All-Inclusive Category, and all the folk theories that it depends on. Someone who believes all those folk theories will, of course, assume that the Realm of Being is real, and that all of the problems of metaphysics are real problems. Those who do not believe one or more of those folk theories will take the Realm of Being as a fictional construct, and therefore will see the Problem of Metaphysics as a pseudo-problem. But each statement of the form "The Real is X" was taken as a fundamental, but nonobvious truth by each of the Presocratic traditions.

## Metaphors for Being

Before we state the metaphors that differentiate the various Presocratic philosophies, it is important to reflect on the nature of the fourteen folk theories given above. These folk theories form the common core of Presocratic philosophy in general. By this we mean that most of them are taken for granted by most of the Presocratic philosophers. However, some philosophers deny one or sometimes more of these. The result is that their particular philosophical views will differ not only with their metaphors, but with which of these fourteen folk theories they accept and which they deny.

### The Milesian Nature Philosophers

These philosophers, like most other Greeks of their time, assumed the following folk theory of matter:

**The Folk Theory of The Elements:**

All matter is made up of some combination of Earth, Air, Fire, and Water, which are taken to be the four basic elements. Each element is either Hot or Cold, and either Wet or Dry.

Earth = Cold and Dry

Water = Cold and Wet

Air = Hot and Wet

Fire = Hot and Dry

**The Milesian Metaphor:**

**The Real is The Material**

This metaphor provides an understanding of the totality of Being in terms of the properties of one aspect of Being, the material aspect. This metaphor defines the view called "materialism" that persists to this day. What makes it special in the Milesian case is the view that the Milesians held of what matter is, namely, that all matter was made up of combinations of earth, air, fire, and water. This created a problem for Milesian metaphysicians who assumed that all Being had a single nature. Was that nature one of the four elements, or was it something else of which the four elements were special cases?

Thales, for example, in answering this question, reasoned as follows:

All things contain Water. All life depends on water. The earth rests upon water. Therefore, water is that which most clearly reveals the nature of Being;

“The first principle and basic nature of all things is water.”

Thales' Metaphor:  
The Real is Water

Source Domain: Water

Target Domain: Essences of Categories of Being

Mapping:

The Essence of Being is Water

The Essences of Each Kind of Being are Forms of Water

Anaximander pointed out an inconsistency in Thales' reasoning: Any of the four elements will possess two of the four possible qualities (Cold, Hot, Wet, Dry). If The Real (The Essence of Being) were one of the four elements, then it could not be the source of any existing thing that possesses the opposite qualities. For example, water is cold and wet. If The Real is water, then everything that is real must be cold and wet. But fire is hot and dry. If Being were cold and wet, it would annihilate fire and fire could not exist. Since it does exist, The Real cannot be water. Therefore, Being in general cannot be any determinate form of of Being. Being must be an indeterminate material (that is, a material with none of the four determinate qualities).

Anaximander's Metaphor:  
The Real is Indeterminate Material Being

Source Domain: Material

Target Domain: Essences of the Categories of Being

The Mapping:

The Essence of Being is Indeterminate Material

The Essences of Each Kind of Being are Determinate Forms of Material

Anaximander, in his argument, makes crucial use of the Folk Theory of Categories, that every category is defined by a list of properties that differentiates it from neighboring categories. Since Being must be present in all Categories, it cannot have any of the differentiating properties. Anaximenes, on the other hand, rejects this application of the Folk Theory of Categories. He argues that the Essence of Being can be a particular kind of substance, provided that there is a principle by which other particular substances can be seen as forms of that particular substance. The substance he chooses is air.

Anaximenes' Metaphor:  
The Real is Air

Anaximenes' reasoning goes as follows: Air is rarefied matter, and it is the most common form of matter. There is a principle according to which all the other basic elements (earth, fire, and water) can be seen as forms of air. The principle is this: All change is either rarefaction or condensation, where:

Water = Condensed Air (since water is denser than air)

Earth = Condensed Water (since earth is denser than water)

Fire = Rarefied Air (since fire is less dense than air)

Heraclitus

Heraclitus saw the problem of Being as follows: Everything that appears to our senses is constantly changing: "Everything flows and nothing abides; everything gives way and nothing stays fixed." "You cannot step twice into the same river, for other waters and yet others go ever flowing on." But Being was assumed to be unchangeable, and knowledge of Being, like any general knowledge, was assumed to be constant. How can Being, which is constant, reveal itself through perceptions and experiences which are always in flux?

His solution made use of (3) the Folk Theory of Natural Behavior Patterns. Consider the example of the acorn and the oak. There is a general fixed pattern of growth that every acorn follows in growing into an oak. Every particular instance of the change of acorn to oak is an instance of this general pattern. This fixed pattern is part of the nature of oaks; in other words, it is one of the essential properties that defines what it means to be an oak.

Similarly, all specific changes in nature are instances of such fixed general patterns of change. One gets insight into such patterns by studying specific changes. "My own method is to distinguish each thing according to its nature, and to specify how it behaves." Thus each natural kind in the world is defined in part by such fixed patterns of change.

The question "What is the Essence of Being?" is answered by asking what all the particular fixed patterns of change have in common. The answer is change itself; since they are all specific patterns of change, what they share is a general pattern of change. That pattern is the Essence of Being. ". . . all things come to pass in accordance with this Logos . . ."

Heraclitus' theory of Being is in the form of a metaphor for understanding the nature of Being in terms of patterns governing change in the perceptible world:

Heraclitus' Metaphor:  
The Real is Change

Source Domain: Patterns of Change

Target Domain: The Categories of Being

Mapping:

The Essence of Each Specific Category is a Specific Pattern of Change

The Essence of Being is Change

Since patterns of change are stable and unchanging, they can be unchanging objects of knowledge. As such they can be grasped by the mind. Thus, despite the fact that the world is in flux, we can know the Essence of Being, which is Change itself. "Wisdom is one -- to know the intelligence by which all things are steered through all things."

Strife Is Justice

In addition, Heraclitus saw the causal order as being a moral order and this followed from his more general account of Being. He writes, "Homer was wrong in saying, 'Would that strife might perish from amongst gods and men.' For if that were to occur, then all things would cease to exist." "War is both father and king of all." "It should be understood that war is the common condition, that strife is justice, and that all things come to pass through the compulsion of strife."

Heraclitus' view of war as a "common condition" and a form of "justice" are anything but incidental to his central metaphor that "The Real is Change". If one adds this central metaphor to certain other conceptual metaphors that were present in the Greek worldview (and that indeed persist today), we can see that these views are consequences of a metaphorical logic. Heraclitus was simply drawing out the logical consequences of his central metaphor, when added to other common metaphors and folk theories.

Heraclitus' central idea is that being reveals itself most clearly in change. The fundamental metaphor for change is that States Are Locations and Change Is Motion (from one State/Location to another State/Location). Hence, motion is where Being reveals itself most clearly. Suppose one asks how something comes to move. Where the source of motion is detectable, motion is the natural result of a dominant force overcoming a lesser force, commonly the force of an object in "resisting" motion. This observation about detectable sources of motion is the basis of an understanding of all motion, even that where the source is undetectable, as arising in the same way. That is, given our knowledge of detectable

sources of motion, there arises a general metaphor to understand all motion, namely,

A motion is the natural result when  
one of two interacting forces is dominant over the other.

But this metaphor is naturally combined with the extremely general metaphor, Change Is Motion, to provide the basis for a common metaphor about all events of change, namely, that Events Are Actions in which there is some dominant force that brings about the event.

A change is the natural result when  
one of two interacting forces is dominant over the other.

Heraclitus is thus employing the possibilities inherent in the metaphor system available to him in his culture: He takes his metaphorical understanding of motion in general, and via Change Is Motion, derives an understanding of change in general.

An entailment of this understanding is:

The interaction of forces  
is the natural and dominant causal source of all change.

Since warring parties are special cases of interacting forces, there is an instance of the Generic Is Specific schema that says:

Interacting forces are warring parties.

This yields

War is the natural and dominant causal source of all change.

By Heraclitus' metaphor, change is the essence of Being. Hence, the causal source of all change is the causal all that is. Hence,

War is the natural and dominant causal source of all.

There is a general metaphor (cf. Turner, 1987) that Causation is Progeneration, that is, that a cause is a parent and the result is its offspring. A special case of a parent is a father, and thus a special case of this metaphor is:

A Natural Cause Is A Father.

This is used for natural causes that may not be obvious or immediate. In addition, there is a very general metaphor schema called Generic Is Specific, which defines a class of metaphors in which something general is understood as one of its specific cases. Since a king is a specific kind of dominant power, there is an instance of Generic Is Specific of the form:

A Dominant Power Is a King

These two metaphors map:

War is the natural and dominant causal source of all.

into

War is the father and king of all.

At this point we can understand why Heraclitus would say, "Homer was wrong in saying, 'Would that strife might perish from amongst gods and men.' For if that were to occur, then all things would cease to exist."

It is two short steps from here to see why he would also say that "Strife is justice." By definition,

A balance occurs when two forces interact  
and the result is a stable pattern.

Suppose two forces interact. Either they are in balance, or one is stronger. The stronger overcomes the weaker. At this point, only one force is present and it may cause a change. By Heraclitus' metaphor, that change is an instance of a stable pattern. This will happen whenever two forces interact. But, by definition, a balance occurs whenever two forces interact resulting in a stable pattern. Thus, a balance is always the result of two forces interacting.

Strife is a special case in which two forces interact. Thus,

Strife will always result in balance.

The major metaphor for justice is:

Justice is Balance

Thus,

Strife will always result in justice.

This is what he means when he says, "Strife is Justice."

### The Pythagoreans

The Milesian nature philosophers tried to explain nature in terms of material substance. This raised the problem of how one could distinguish among different kinds of things made of the same matter but having different forms. The distinction could not be made in terms of matter alone; distinctions of form were necessary.

In response to this problem the Pythagoreans argued that they had discovered principles of form that could distinguish among different kinds of physical objects. As objects of knowledge, these forms had to be stable patterns shared by all things of the same kind. Their discoveries in mathematics suggested to them that numerical properties and relations were the ultimate formal

constituents of reality.

The Pythagorean view can be characterized with two complementary arguments, one about knowledge and one about reality.

The Knowledge Argument:

- Knowledge is Knowledge of the real. (FT 13)
- We can have knowledge of the real. (FT 9')
- Our knowledge is stable and unchanging. (FT 12)
- Therefore, knowledge of the real is stable and unchanging.
- Mathematical knowledge is the only stable, unchanging knowledge.
- Therefore, knowledge of the real must be mathematical knowledge.
- Mathematical knowledge is knowledge about number.
- Therefore, the real is number.

The Reality Argument was based on a further metaphor for number itself:

Numbers are Spatial Shapes

The Pythagoreans represented numbers as spatial configurations: All square numbers were square figures.

Three, six ten, fifteen, etc. were triangles.



**Cube numbers were cubes (in 3-dimensional space).**

**This metaphor was used in the Reality Argument as follows:**

**The Reality Argument:**

**-Matter alone cannot distinguish among the kinds of things that exist. They are instead distinguished by form.**

**-Every existing thing has a form (shape).**

**-Numbers are spatial shapes**

**-Therefore, every existing thing can be characterized by a number.**

**-Numerical properties are, therefore, what differentiate objects.**

**-Numbers characterize specific forms of Being.**

**-Therefore, number characterizes Being in general.**

**-In other words, the real is number.**

**Pythagoras' Metaphor:  
The Real Is Number**

**Source Domain: Number**

**Target Domain: Categories of Being**

**Mapping:**

**The Pythagorean Metaphor:  
The Real Is Number**

**The essences of specific categories are particular numbers. The essence of Being is number in general.**

**This argument was summed up by the Pythagorean Philolaus: "Everything that can be known has a number" because it is not possible to recognize anything with the mind without number.**

**The Pythagoreans saw confirmation for their hypothesis in the fact that numbers could be used to measure the earth, in the fact that music seemed to operate in accordance with numerical relations, and that objects in the heavens moved in numerically describable paths.**

**As far as we know, the Pythagoreans made use only of the two previous arguments. However, the Pythagorean worldview also had metaphorical support within the Greek conceptual system. One of the major metaphors for thinking that was present in Presocratic Greece, and that has persisted to the present, is Thinking Is Calculating, in which Ideas Are Numbers, and Logical Conclusions**

**Are Sums.** We can see this metaphor is present-day English in expressions like: What's the bottom line? That just doesn't add up. Sum that up for me. I couldn't figure that out. I reckon we'll be home by six.

If ideas are numbers, then knowledge is in the form of numbers. Since knowledge is knowledge of the real, it follows that the real is number.

### Parmenides

All of the previous philosophers assumed that the concept of Being was consistent with the picture of the world presented by the senses. The picture our senses give us is one in which what exists (Being) is a plurality of entities that come into and go out of existence. These entities are separated by and move within a void (Nonbeing).

Parmenides shows that no previous philosopher had understood the radical implications of the very concept of Being. Parmenides demonstrates that the concept of Being is incompatible with our commonsense understanding of the world. Since he takes the concept of Being as a given, he concludes that we have to give up our commonsense understanding of the world.

Parmenides shows logically what is entailed by the concept Being: What results from having the concept at all is a universe where there are no separable distinct entities: What exists, Being, is a single homogeneous perfect whole extending without boundaries, unchanging and immovable.

### Parmenides' Reasoning

Parmenides most basic conclusion is that Nonbeing cannot exist.

All things that exist have the property of Being.  
If Nonbeing existed, it would have the property of Being.  
But then it wouldn't be Nonbeing.  
Therefore, Nonbeing cannot exist.

From the fact that Nonbeing cannot exist, Parmenides logically derives the following properties of Being.

### Being Cannot Change

Since Being could only change from Nonbeing or into Nonbeing, and since Nonbeing doesn't exist, Being cannot change, since there is nothing for it to

change to or from.

### Being Is Immoveable

In order for Being to move, the place it move to must previously have been occupied by Nonbeing. But Nonbeing doesn't exist. Thus, Being cannot move.

### Being Is Boundless

If Being had boundaries, Nonbeing would be outside its boundaries. But since Nonbeing doesn't exist, Being is boundless.

### Being Is One

Suppose Being were many. Then something would separate each instance of Being. That which separates must be either Being or Nonbeing. But since Nonbeing doesn't exist, it must be Being. But then there is no separation. Hence, Being is one.

These are simply conclusions that follow from those folk theories that give rise to the concept of being, namely, the Folk Theories of Essences, Categories, Hierarchy of Categories, and especially the All-Inclusive Category. Once Being is defined relative these folk theories, the above properties of Being follow.

Parmenides, having concluded that Being is One, goes on to conclude that Being is not even separate from thought. The Folk Theory of the Intelligibility of Being guarantees that Being can be known, in other words, that Being entails knowledge. Since knowledge entails thought, Being entails thought. Correspondingly thought entails Being. Parmenides assumes that one can only think thoughts that are logically consistent. Since the existence of Nonbeing is logically inconsistent, one can only conceive of Being, that is, only things that exist can be objects of thought. Thus thought entails Being and Being entails thought, which makes them the same.

“Thinking and the object of thought are the same. For you will not find thought apart from Being, nor either of them apart from utterance.” “Thought and Being are the same.”

### Democritus and Leucippus

**Definition:** An atom is the smallest indivisible particle of being; each atom has 3 properties: size, shape, and momentum.

**The Metaphor of Democritus and Leucippus:  
The Real is Atoms in the Void**

**Each Kind of Being Is A Composition of Atoms of One Kind.**

**Entailment: Nonbeing is the void; it has no atoms.**

**Entailment: Since there is nonbeing between each occurrence of Being,  
The Real is Atoms in the Void.**

**Entailment: Change of kind of Being is change of atomic composition.**