

**Writing Project 1: The Presocratics**

**1. What was Parmenides' basic argument to the effect that the world as it really is must be very different from the world as experienced through the senses?**

Parmenides' claim is that "all is unity," or that no distinction or separation exists in the world, contrary to what our senses tell us. His basic argument for this discrepancy of the senses is that "nothing doesn't exist." That is, he argues that there doesn't exist such a thing as a "not-thing" (not-rock or not-desk, for example), so there can't be distinctions between individual objects, as that would imply that each object held the [nonexistent] property of not being any other object. And since, Parmenides would argue, we cannot know anything about nothing, the idea of two objects being separate entities (and being not-each-other), isn't useful. Therefore, he argues, there is no distinction between objects in the world (and he seems to assert that language itself is biased in such a way as to imply these distinctions when referring to the world), and our senses, which lead us to experience objects as separate and distinct entities, must be misleading us in some way, as they contradict the logical conclusions that Parmenides has drawn, and since they force us to admit the existence of nothing.

His argument can be translated and structured, to a degree. If we convert his statements to analytic statements, we can structure it as the following:

D: Distinction

N: Negation (the quality of 'not-things')

I: Individuality

S: Our Senses

1.  $\sim N$
2.  $\sim N \rightarrow \sim D$
3.  $I \rightarrow D$
4.  $S \rightarrow I$
5.  $\sim D$           MP (1,2)
6.  $\sim I$           MT (3,5)
7.  $\sim S$           MT (4,6)

And while admittedly, this probably isn't a scheme Parmenides had in mind, it's helpful for reproducing the basic argument at hand. That (1) there's no such thing as nothing, (2) that non-existence implies that there's no distinction between things (as there's no nothing to go between them and by definition, separate them), (3) Individuality implies distinction and (4) Our senses imply that there's individuality in the world, and since (5) no distinctions exist, (6) there's no individuality, and therefore (7), our senses must be false.

**2. Select a (different) claim made by a presocratic philosopher and present it clearly and neutrally.**

Similarly, Zeno argues for Parmenides' view of a unified existence (with no distinctions of any kind), but does so by presenting a series of arguments (later referred to as paradoxes) that attempt to demonstrate the absurd consequences that come of assuming the world is the way our senses would tell us it is. The most famous of these paradoxes is about motion. In order for a person to walk from point A to point B, he must first travel to point C, which is half way between A and B. But to get to point C, he has to travel to point D, which is halfway between points A and C, and so on, until our traveler must traverse an infinite number of points in a finite period of time, which our intuition tells us is not the case. It's important here to note that Zeno isn't arguing that motion itself isn't possible. Rather, he's arguing that it

doesn't even occur. Instead, we are misled by our senses into believing that we have traveled some distance, when we weren't separate from our destination to begin with. Many of Zeno's other paradoxes deal with similar problems of motion and dichotomy. That is, Zeno argues that with our current sense-based worldview, if we divide an object into its smallest possible constituent pieces, and then divide it once more, we will end up with nothing,. And since logic dictates that only nothing comes from nothing, we are forced then to admit that our worldview would paradoxically tell us that the sum of an infinite number of zeros is something larger than zero.

### **3. Discuss critically the claim presented in question 2.**

While it would seemingly be easy for anyone who's studied infinite sums and series in Calculus or had an introductory Physics course to dismiss Zeno's paradoxes, it could be argued that they still have merit despite their superficial mathematical flaws. One intuitive method for tackling the paradoxes is to point out that time, like distance, is not above the same kind of infinite division, as Zeno himself points out in his arrow paradox. Thus, any finite length of time, like any finite distance, can also be subdivided into an infinite series of tiny moments in time, and thus the walk from A to B isn't as simple as traversing an infinite series of points in a finite time, but rather an infinite series of points in a seemingly infinite span of moments.

Still though, this doesn't seem to debunk Zeno's paradox, as his arrow paradox points to a similar idea, claiming that as we divide time down into smaller moments, we hit a point where motion ceases to exist as a fluid occurrence and instead becomes a series of still frames. Likewise, using Calculus to attack the motion paradox doesn't seem to help much, as while it certainly shows us the possibility of an infinite sum of

points being larger than zero (take integrals, where the area under any given point is zero, for example), it doesn't necessarily do so in a meaningful way. We could interpret Zeno's paradoxes to work with the convergence of the infinite series. That is, we could imagine a convergent sequence that occurs in a finite time period where we had some result that depended on the last element of the sequence. Our outcome depends on the last element, but there is no "last" element. Zeno's argument is then that there is no logical way to achieve an end to the infinite sequence in the finite period. And while without a concrete example this is admittedly weak and somewhat difficult to conceptualize, constructing such an example may in itself be physically impossible (as it would require us to have both space and matter be infinitely divisible), and is certainly beyond the scope of this paper.

So again, we return to the practical applications of Calculus and Physics when constructing criticism to Zeno's arguments. Our knowledge of these tells us that infinite division of matter isn't physically possible, and that our infinite sums can be larger than zero. And while falling back on these might not be the most charitable way to attack Zeno's arguments, they are certainly convenient.