

Democritus

Democritus agreed with his predecessors that transformations in nature could not be due to the fact that anything actually “changed.” He therefore assumed that everything was built up of tiny invisible blocks, each of which was eternal and immutable. Democritus called these smallest units atoms.

The word “a-tom” means “un-cuttable.” For Democritus it was all-important to establish that the constituent parts that everything else was composed of could not be divided indefinitely into smaller parts. If this were possible, they could not be used as blocks. If atoms could eternally be broken down into ever smaller parts, nature would begin to dissolve like constantly diluted soup.

Moreover, nature’s blocks had to be eternal – because nothing can come from nothing. In this, he agreed with Parmenides and the Eleatics. Also, he believed that all atoms were firm and solid. But they could not all be the same. If all atoms were identical, there would still be no satisfactory explanation of how they could combine to form everything from poppies and olive trees to goatskin and human hair.

Democritus believed that nature consisted of an unlimited number and variety of atoms. Some were round and smooth, others were irregular and jagged. And precisely because they were so different they could join together into all kinds of different bodies. But however infinite they might be in number and shape, they were all eternal, immutable, and indivisible.

When a body – a tree or an animal, for instance – died and disintegrated, the atoms dispersed and could be used again in new bodies. Atoms moved around in space, but because they had “hooks” and “barbs,” they could join together to form all the things we see around us.

Lego blocks have more or less the same properties as those which Democritus ascribed to atoms. And that is what makes them so much fun to build with. They are first and foremost indivisible. Then they have different shapes and sizes. They are solid and impermeable. They also have “hooks” and “barbs” so that they can be connected to form every conceivable figure. These connections can later be broken again so that new figures can be constructed from the same blocks.

The fact that they can be used over and over is what has made Lego so popular. Each single Lego block can be part of a truck one day and part of a castle the day after. We could also say that Lego blocks are “eternal.” Children of today can play with the same blocks their parents played with when they were little.

We can form things out of clay too, but clay cannot be used over and over, because it can be broken up into smaller and smaller pieces. These tiny pieces can never be joined together again to make something else.

Today we can establish that Democritus’ atom theory was more or less correct. Nature really is built up of different “atoms” that join and separate again. A hydrogen atom in a cell at the end of my nose was once part of an elephant’s trunk. A carbon atom in my cardiac muscle was once in the tail of a dinosaur.

In our own time, however, scientists have discovered that atoms can be broken into smaller “elemental particles.” We call these elemental particles protons, neutrons, and electrons. These will possibly some day be broken into even lesser particles. But physicists agree that somewhere along the line there has to be a limit. There has to be a “minimal part” of which nature consists.

Democritus did not have access to modern electronic apparatus. His only proper equipment was his mind. But reason left him no real choice. Once it is accepted that nothing can change, that nothing can come out of nothing, and that nothing is ever lost, then nature must consist of infinitesimal blocks that can join and separate again. Democritus did not believe in any “force” or “soul” that could intervene in natural processes. The only things that existed, he believed, were atoms and the void. Since he believed in nothing but material things, we call him a materialist.

According to Democritus, there is no conscious “design” in the movement of atoms. In nature, everything happens quite mechanically. This does not mean that, everything happens randomly, for everything obeys the inevitable laws of necessity. Everything that happens has a natural cause, a cause that is inherent in the thing itself. Democritus once said that he would rather discover a new cause of nature than be the King of Persia.

The atom theory also explains our sense perception, thought Democritus. When we sense something, it is due to the movement of atoms in space.

When I see the moon, it is because “moon atoms” penetrate my eye.

But what about the “soul,” then? Surely that could not consist of atoms, of material things? Indeed it could. Democritus believed that the soul was made up of special round, smooth “soul atoms.” When a human being died, the soul atoms flew in all directions, and could then become part of a new soul formation.

This meant that human beings had no immortal soul, another belief that many people share today. They believe, like Democritus, that “soul” is connected with brain, and that we cannot have any form of consciousness once the brain disintegrates.

Democritus’ atom theory marked the end of Greek natural philosophy for the time being. He agreed with Heraclitus that everything in nature “flowed,” since forms come and go. But behind everything that flowed there were some eternal and immutable things that did not flow. Democritus called them atoms.