* Epicurean Physics

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1. Introduction To Epicurean Physics

Epicurean Physics forms a crucial part of Epicurean philosophy, laying the groundwork for understanding nature and the universe. This foundation is essential as it influences the ethical teachings and the overall conduct of life. While we no longer have Epicurus' own list of the fundamental principles of physics, we can derive the most important points by comparing Epicurus' letter to Herodotus, Lucretius' "De Rerum Natura," and The Inscription of Diogenes of Oinoanda.

A comparison table of elementary principles discussed in the Letter to Herodotus and De Rerum Natura has been prepared by Diskin Clay in his article "Epicurus' Last Will and Testament:"

1. **Nothing comes into being out of nothing.**
    1. Letter to Herodotus 38.8—39.1
    2. De Rerum Natura I 145-150, 159-160
2. **Nothing is reduced to nothing.**
    1. Letter to Herodotus 39.1-2
    2. De Rerum Natura I 215-218, 237
3. **The universe always was as it is and always will be.**
    1. Letter to Herodotus 39.2—5
    2. De Rerum Natura II 294-307; V 359--363
4. **The universe is made up of bodies and void.**
    1. Letter to Herodotus 39.6-40.2
    2. De Rerum Natura I 418-428
5. **Bodies are atoms and their compounds.**
    1. Letter to Herodotus 40.7—9
    2. De Rerum Natura I 488-486
6. **The universe is infinite.**
    1. Letter to Herodotus 41.6-10
    2. De Rerum Natura I 958-964, 1001
7. **Atoms are infinite in number and space extends without limit.**
    1. Letter to Herodotus 41.11-42.4
    2. De Rerum Natura I 1008-1020
8. **Atoms of similar shape are infinite in number, but the variety of their shapes is indefinite, not infinite.**
    1. Letter to Herodotus 42.l0-43.4
    2. De Rerum Natura II 522-527

9. **Atomic motion is constant and of two kinds.**
    1. Letter to Heroduts 43.5-44.1
    2. De Rerum Natura II 95-102 (I 952)
10. **Atoms share only three of the characteristics of sensible things: shape, weight, mass.**
    1. Letter to Herodotus 54.3—6
    2. De Rerum Natura II 748-752

1.1. Elementary Principles - Atoms, Void, Infinity, and Eternality

1. **Matter is Uncreatable**: Epicurus posited that matter cannot be created out of nothing. This principle rejects the notion of divine creation and implies that the universe has always existed in some form .
2. **Matter is Indestructible**: Corresponding to the first principle, this asserts that matter cannot be destroyed into nothingness. The observable transformations in nature are merely changes in the arrangements of matter, not its annihilation .
3. **The Universe Consists of Solid Bodies and Void**: According to Epicurus, the universe is composed of solid, indivisible particles (atoms) and empty space (void) through which these particles move .
4. **Solid Bodies are Either Compounds or Simple**: Atoms are the simplest form of matter, while everything else is a compound of these atoms. This differentiation underpins the complexity observed in the natural world .
5. **The Multitude of Atoms is Infinite**: The number of atoms is limitless, ensuring that matter and its various forms are inexhaustible within the infinite universe .
6. **The Void is Infinite in Extent**: Space itself is boundless, allowing for the infinite movement and interaction of atoms without any ultimate boundary .

1.2. Atomic Motion

1. **Atoms are Always in Motion**: Atoms perpetually move, driven by their intrinsic properties. This constant motion is a fundamental aspect of their existence.
2. **The Speed of Atomic Motion is Uniform**: All atoms move at a consistent speed, regardless of their size or weight, which Epicurus argued against the Aristotelian view that heavier bodies fall faster .
3. **Motion is Linear in Space, Vibratory in Compounds**: In the void, atoms move in straight lines until they collide. In compound bodies, atoms exhibit vibratory motion, maintaining the integrity and properties of the compound .
4. **Atoms are Capable of Swerving Slightly**: Known as the "swerve" or "clinamen," this slight deviation in atomic motion allows for the interaction and collision of atoms, enabling the formation of complex bodies and ensuring free will by breaking the chain of deterministic causation .

1.3. Qualities and Interactions of Atoms

1. **Atoms are Characterized by Weight, Shape, and Size**: Each atom has specific attributes that determine its behavior and interactions. These inherent qualities explain the diversity observed in compound bodies .
2. **The Number of Different Shapes is Not Infinite, Merely Innumerable**: While the shapes of atoms are numerous, they are not infinite. This finite variety allows for the predictable formation of different materials and substances in nature.

1.4. Bodies

"Bodies" are combinations of atoms and void. Bodies have properties and qualities, and give rise to emergence and events.

1.5. Attributes and Events

Epicurus distinguished between attributes (inherent qualities of an object) and accidents (transient states that may or may not be present). This distinction was crucial in explaining the nature of physical bodies and their changes without invoking incorporeal entities as proposed by Plato and other philosophers .

1.6. The Issue of Causation

Epicurus tackled the philosophical issue of causation by identifying three primary causes: the weight of atoms causing their downward motion, collisions leading to diverse movements, and the swerve introducing randomness and free will. This framework rejects deterministic views and supports the idea of human agency .

1.7. Nature Has No Gods Over Her

1. There Are No Eternal or Supernatural Forms Or Essences Or Other Natures
2. There Is Nothing Above Or Outside The Universe
3. There Are No Supernatural Gods But There Are "Natural" Gods
4. Do Not Assign To The Gods of Nature Anything That Is Inconsistent With Incorruption Or Blessedness
5. The Human Soul Is Natural And Is Born With The Body
6. Death is Nothing(ness) To Us - The Human Soul Does Not Survive The Death Of The Body
7. "Images" Are The Flow Of Particles From Bodies

1.8. Perception and Sensation

Epicurus believed that sensations are the primary means of interacting with the physical world. Sensations are direct and reliable, providing the basis for knowledge. Errors arise not from sensations but from incorrect judgments about them. This principle underscores the empirical foundation of Epicurean philosophy, emphasizing observation and experience over abstract reasoning .

1.9. Implications for Ethics

Epicurean physics directly influences ethical thought by establishing a naturalistic worldview. The understanding of nature and the rejection of superstition and divine intervention lead to a focus on achieving tranquility and happiness through rational living and the pursuit of pleasure in moderation. This approach is grounded in the physical realities of existence and the natural limits of human desires .