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Aristotle's Static World and Traditional Education – A Secondary Publication

Jun-Young Oh, Yeon-A Son*

Dankook University, Gyeonggi-do 16890, Republic of Korea

Corresponding author: Yeon-A Son, yeona@dankook.ac.kr

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Abstract: The purpose of this study is to understand the characteristics of Aristotle's view of nature that is, the static view of the universe, and find implications for education. Plato sought to interpret the natural world using a rational approach rather than an incomplete observation. He thought that viewing the world from the perspective of geometry and mathematical regularity was the best way to understand the world. On the other hand, Aristotle believed that we could understand the world through observations. His worldview portrayed a static reality, imbued with individual purpose and a sense of deliberate legitimacy. In addition, the natural motion of earthly objects and celestial bodies, which are natural movements towards the world of order, are the original actions. Aristotle thought that all natural things would carry out some movement. Above all, Plato and Aristotle view the world as a static universe. It is possible to fully grasp the world by approaching the objective nature that exists independently of human beings with human reason and observation. After all, for Aristotle, like Plato, their belief that the natural world was subject to regular and orderly laws of nature, despite the complexity and seemingly unceasing changes, became the basis of Western thought. The universe, rooted in the metaphysical perspective of ancient Greece and carried forward in modern philosophy, has traditionally depended on developing a dichotomy of comprehension, distinguishing between what is already accomplished or predetermined, the ideal and the inevitable. This dichotomy forms the foundation of traditional teaching methods that often do not prioritize the opinions of learners.

Keywords: Rational approach; Plato; Aristotle; The static world; Traditional education

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1. Introduction

Aristotle presents the "tower argument" that the Earth is at rest. The idea is that if an object falls straight down a tower, its direction points directly to the center of the universe. If this was not the case, and the Earth was moving in orbit or rotating while the object was falling down the tower, it would not be able to fall exactly under the tower. However, observations prove that objects fall directly under the tower. In the tower argument, the Earth is the center of the universe. Based on this idea, the natural motion of all objects on Earth is a straight line up and down. He explains that we view the world as a stationary system that has an inner purpose of ultimately

finding its own place. Aristotle said that progress only happens when we build upon certain ideas rather than thinking from our current perspective. On earth, we naturally move to find our place, and in heaven, we move in a complete circle. For example, when we think about observation, there is passive and active observation. Passive observation involves observing the object as it is. Active observation or causal observation, on the other hand, involves controlling variables. Aristotle centered his explanation of observation on the purposive method of inquiry, which is to look at the world in a stationary situation. As such, understanding Aristotle's philosophy can have important implications for science education, as it can serve as a basis for explaining how inquiries should be conducted in science education.

In ancient Greece, Plato and Aristotle believed that the best social order was the one with the least amount of change, meaning that the initial perfect state was gradually exhausted. In their worldview, there was no place for the notion of continuous change and growth, which contradicted Darwin's worldview. Rather, the ideal state would be to slow this process of decay as much as possible. The Greeks interpreted great change and development as a source of confusion that would lead to greater decline, and their goal was therefore to pass on to the next generation a system that was as protected as possible from change [1]. The ideology of the Good, the highest being in the chain of being, also implied an objectivist, organic worldview, i.e., that values and beings coincide. Not only is there an objective truth that is independent of our perception, but physical existence can be understood in relation to the mental activity of the perceiving reason. This can be understood as the teleological idea that the order of physical objects and events is secondary to mind and knowledge.

Aristotle was primarily a deductive thinker, i.e., the process of thinking in such a way that, for example: "everyone dies (grand premise)," "Socrates is a person (minor premise)," "therefore Socrates dies (conclusion)," etc. Aristotle explained through an analogy that each of us is a biological organism, and the world is an organism, so each substance comes from a single organism and returns to the main body of the organism (the grand premise of the logic proposed by analogy). Then an apple falls to the ground and rots (minor premise). The reason is that the substance of the apple is returning to the body of the earth. Furthermore, the celestial bodies revolve around the Earth in a perfect orbit. Everything outside of the moon's orbit is perfect, and this perfection is visible to the naked eye (premise). This is because the universe is finite, and at its center is the unmoving Earth. This is because, unlike the earth, which is secular and irregular, the heavenly bodies are perfect spheres, bodies that revolve in perfect circular orbits (Argument and Conclusion on the Motion of the Heavens). Aristotle's conception of the world as an organism was based on logic, which is rational thought involving our intentions as well as empirical experimentation. It was a purposive, organismic worldview in which all things, like humans as organisms, have an inherent purpose. This is a metaphysical and philosophical worldview based on Yuvi.

The purpose of this study is to explore Aristotle's static view of purposefulness in nature and to discuss the relevance of Aristotle's static cosmology and worldview to education and their implications on education.

2. Aristotle's static universe and worldview

Aristotle defined natural science as the study of "change," with kinematics as its core. This is a broad concept that includes not only changes in place but also changes in quantity (creation and destruction) and quality.

To address Sophists' problem of the relativity of knowledge, Aristotle implicitly assumes the metaphysical realism of a static universe in which knowledge (truth) is unchanging and each thing has its own place according to the hierarchy of purposes. Among other things, to explain the phenomenon of constant change on the ground in a fixed round universe with a constant flow of time, he proposed a kinetic theory that transfers motion and

changes from the potential state to the actual state (a concept that is well consistent with metaphysical beliefs). For example, the qualitative explanation that a fruit made up of water and flesh falls to the ground where it belongs, which is made up of water and earth, fits well with the proposal that it is a transition from a latent state to a real state (a transition to a logical and rational concept according to the truth congruence theory, which raises the status of the concept). If the mass of the fruit is twice as large, one would expect the purpose of moving to one's unique place in a larger hierarchical system to be twice as large. However, in reality, the difference is not very large, so while the purposive, qualitative prediction works as expected, the causal, quantitative prediction does not (truth correspondence is difficult to establish, and therefore difficult to elevate to scientific concept status). In the era of ancient Greek philosophy, goodness is seen as right rather than good, so defending one's position is right for all, and moral goodness is the highest value (zeitgeist).

On the other hand, we can discuss metaphysical deontology. According to the teleological view, time is nothing more than a concept, and as such, it is only relevant to human consciousness. In this view, it is a finite and fixed space-time that must have its source in the infinite mind of God or man. Finite but fixed spacetime is metaphysical, and rational human thought is conceptual.

Aristotle, whose natural sciences dominated Western thought for 2,000 years, believed that humans could understand ultimate reality based on universal, self-evident principles. "Everything in the universe has its own place," he said, "so we can deduce that objects that belong to the ground fall to the ground and that smoke rises to the top because it belongs to the top," he said.

The goal of Aristotle's science was to explain "why" things happen, but it was a purposive rather than a causal approach, and it was a qualitative worldview with hierarchies. It started with the biological analogy that each human being is a microcosm and the entire universe is a macrocosm, i.e., the universe is a biological organism. The best example of a biological organism is the human body. The biological answer is that each organ is there because it performs an indispensable function for the smooth functioning of the whole body. Like such biological organisms, our universe can be viewed as a hierarchical complex organism made up of interrelated parts.

In ancient Greece, it was believed that all living things had souls and that the good in them was so self-actualizing that they developed into gods. The discipline that deals with existence in general, insofar as it exists, we have hitherto called ontology, but in general, it is called metaphysics. And Aristotle himself called it the "first philosophy" (*prote philosophia*). The reason why ontology is the first, or best, philosophy is that it is the discipline that finds the ultimate cause of each being and phenomenon of existence. Later generations called this discipline metaphysics. Metaphysics is the discipline that seeks after natural science (meta), that is, beyond the things we normally experience, to the most universal and ultimate source of things, and because of this, metaphysics naturally transcends the world of senses.

In Aristotle's book *Metaphysics*, which is relevant to this study, the first philosophy or metaphysics is strictly divided into two parts: ontology, later called *metaphysica*, *generalis*, and *metaphysica specialis*, or what Aristotle himself called *theologike*.

In ontology, Aristotle discusses entities that exist in the first sense of the word and the highest principle, the contradiction ratio, while in theology, he explores God as the first cause or ultimate cause [2].

As shown in **Table 1**, the epistemological justification from metaphysics is the "method" adopted to explain the natural world. It starts with a few simple assumptions and then proceeds to explain more complex situations in detail through logical progression, so that "logical consistency" is a more reliable value of objective judgment.

Table 1. Aristotle's worldview

Classification		Highlights	Remarks
Metaphysical belief systems (forming the framework of one's worldview)	Metaphysical beliefs (general metaphysics)	(1) Knowledge (truth) about the world is fixed (metaphysical). (2)The world consists of people, God, and nature. Of the constituents, except for God, the mind (ontology) is first, from which the other things are derived. Rather than a transcendent God, its role is that of a metaphysical being, functioning as the principle of the universe. In this metaphysical ontology worldview, individual objects possess a purpose, which is the fulfillment of their form.	Explained by metaphysical ontology
	Metaphysical concepts (special metaphysics)	(1)Time and space, which contain the constituents of the world, are immutable and fixed (metaphysics). (2)In a finite universe, the Earth is at an absolutely stationary center, and there is a circular motion of the celestial bodies that shows the cycle of time, but on Earth, there is only the purpose of individual things.	If space-time is finite and fixed, then metaphysically, if it is rooted in rational human thought, it can be described as the theory of ideas
Epistemic justification for judging knowledge to be true	Sources of justification for the proposed theory	Reason (mathematics) and logic in the formation of theories	Rationalism is based on reason
	Conditions that must be met to be true	Logical consistency (conditions for judgment after theory formation)	Qualitative explanation by deduction, i.e. purposive explanation

As a special metaphysics, the conception of the universe is that the universe is a fixed house in which we live and that the substances in it have some purpose to be realized; as for human beings, there is a hierarchy of substances in the universe, including human beings; ubiquitously, our human bodies act by organically affecting each other, so that all the objects that make up the universe behave like organisms; and everything in the world is an ontological image created by the self, mind, or self-will for itself. These organic and purposive metaphysical beliefs required a logic of our intentionality as a source of justification for the qualitatively different worlds of heaven and earth in Aristotle's natural philosophy, and the methodology was deductive argumentation. In this study, we will use deductive argumentation to understand Aristotle's natural philosophy.

3. The natural motion of earthly objects and celestial bodies toward a world of order.

Aristotle viewed the earth as immovable, and he justified it well [3]. For example, if a heavy object is thrown upwards, it will fall back down to the ground, no matter how high it was thrown. If the Earth is moving, it would not be able to fall exactly back to the same place it was thrown.

Aristotle said that rationality can be observed everywhere. Just like an actor fulfilling the purpose of playing a role, all natural things will move toward their own inherent ends. That is how purposefulness is realized. He conceived of nature as being like the progression of a play, with each part exemplifying a general idea and combining to approach the final goal. Nature is divided so as to assign distinctive goals to individual objects [4], and the center of the universe is the goal of the motion of heavy bodies. Celestial bodies are the objects of motion for objects of an ascending nature. Such celestial spheres are for celestial bodies that are neither created nor destroyed. The earth, on the other hand, is for things that are created and destroyed. Nature can be described as a play in which each object plays a part.

Above all, the order of the universe is eternal. If the Earth rotates on a single axis, then eventually all objects on Earth must be in circular motion around a point on that axis. However, all parts of the Earth that we observe are actually moving in a straight line toward the center of the Earth. Furthermore, the violent motion of an object cannot continue forever. Therefore, the natural motion of all objects on the Earth is a straight line

toward the center of the Earth.

Aristotle's ideas, which dominated Western thoughts for 2000 years, believed that humans could understand ultimate reality by reasoning from universal and self-evident principles. Thus, it is a self-evident principle that "everything in the universe has its own place."

All objects on Earth are made of four elements: air, earth, fire, and water. This theory is called the "four elements theory." The word element means basic substance. The idea is that when these four elements combine, matter is formed, and its position is determined by its unique properties.

Therefore, all matter on Earth has an inherent upward and downward motion to find its place in the universe. This motion was called the natural motion of all matter on earth. This upward and downward motion is said to move in a straight line that is connected to the center of the Earth.

On the other hand, when an object is thrown upward in a vertical direction or a stone is moved in a circular motion on a horizontal plane, it does not seek its own position, so it is called "violent motion" compared to natural motion. For such a vigorous movement, whatever force acts on the object to cause such a movement must continue to act during the movement.

According to Aristotle, the heavenly bodies are composed of an element called the "fifth element" or "ether," which differs from earthly objects. The natural motion of objects made of this ether is circular. All observed celestial bodies are in circular motion because it is their natural state of motion. This is because it is their natural state of motion to remain in the same position with respect to the earth, just as it is the natural motion of a heavy object to fall downward to the earth.

While the four elements on Earth are subject to change or decay, the heavenly bodies are different: ether, the element that makes up the heavenly bodies, is immutable or indestructible. It cannot be changed and will always be the same.

Ultimately, Aristotle's ideas were based on the metaphysical belief that the order of the universe is eternal. The natural motion of the earth is that the property of moving to its own unique position is inherent in every individual object. The center of that unique position coincides with the center of the earth. Intense motion, on the other hand, does not have the property of moving to its own center because its cause is external. Therefore, we can see that the inherent rationality of all objects consists in their natural motion.

4. Features of ancient Greek cosmology

Lovejoy's *The Great Chain of Being* examines how the concept of being, as it emerged in ancient philosophical thought, underpinned a number of intellectual systems in a chain that continued into the 17th and 18th centuries [5]. The "logical connection" between the concepts of being in one period and the concepts of being in another was more important than the connection in terms of time. This tracing of Lovejoy's unit ideas can be seen as a method of internal intellectual history. Ideas are obviously sociological objects of knowledge, but they also have their own logical continuity [6]. It is an analytical inquiry into traditional metaphysics. This study aims to explore the characteristics of ancient Greek cosmology, focusing on the principle of fullness, the principle of continuity, and the principle of self-fulfillment, among other principles presented by Lovejoy.

First, the principle of fullness is the principle that all possibilities can be realized (from top to bottom), the thesis that the universe is a species-rich form thoroughly exemplified by the diversity of species that can be thought of as the "kinds" of living things. This principle assumes that no potential existence should go unrealized, emphasizing that the scope and richness of creation must match the vast possibilities of existence. It aligns with the productive capacity of a comprehensive and inexhaustible "source." The term "principle of

fullness" is used broadly to encompass any inference derived from the assumption that a world is better when it encompasses a greater number of things [5].

The principle of continuity is the principle that everything in an infinite series in the natural world advances step by step, and nothing makes a leap. Things are said to be continuous if they have one and the same limits that overlap and are shared within them. Aristotle introduced the idea of a linear or continuous connection between qualitative differences in objects into his museum. The idea of a series of classifications is that properties of one kind tend to show a gradual transition to another rather than an obvious boundary between them [5]. The principle of succession can be directly deduced from Plato's principle of fullness. For example, if there is a theoretically possible intermediate form between two given natural species, then that form must be realized. If not, there would be an empty gap in the universe, and creation would not be as "good" as one would expect. This implies the unacceptable consequence that the source or creator of the universe is not "good" [5].

The principle of self-fulfillment is illustrated through its connection to Aristotle's concept of pure form. Plato, in the Philebus, posits that the 'good' stands apart from all other things because the being possessing it is consistently and perfectly fulfilled in every aspect, lacking nothing else. If "good" means absolute self-fulfillment, and if all imperfect and finite temporal beings are not themselves identifiable with the divine essence, then neither the entire world as perceived in time, nor any conscious being that is not truly self-fulfilled in some sense, can add anything good to reality. Divine perfection has been achieved in God, and "creatures" can add nothing to it [5]. For Aristotle, God has nothing to do with the origin of the universe, knows nothing of what happens on Earth, and is unaware of our existence; he is merely an "immovable mover" in the sense that he is the cause of the motion of the heavenly bodies, but is not himself moved.

In discussing the principle of sufficient reason, Leibniz asserts that selecting a theory from the possible worlds must be grounded in a good reason, aligning with the satisfiability criterion. According to Leibniz, this good reason is characterized by optimality and harmony, which, semantically speaking, are equivalent to the conditions of economy, simplicity, and aesthetic unity commonly utilized by physicists as criteria for theory selection. Scientists decide on a model of physical space as a geometric model that maximally satisfies these criteria. The reason is that these conditions are characterized by a simpler and more comprehensive solution to the given problem.

The principle of linear hierarchy implies that the series forms a hierarchy from the lowest being to the highest perfect being, God. The idea of a chain of beings was first systematized by the Neo-Platonist Plotinus, although its constituent concepts come from Plato and Aristotle.

In terms of the influence of Greek Platonic philosophy, the foundation of the intellectual history that dominated Western science for nearly 2,000 years of Western history was Plato's essentialism. According to Plato, the universe is composed of eternal, perfect truths, or ideals, and any variation from those ideals is an imperfect projection of the truth. Therefore, the species of living things must be eternal. This idea was later reinforced by theology and came to dominate the Western mindset [6]. Aristotle also called it "the theory of fixed and indivisible species" [5]. **Table 2** summarizes the characteristics of these ancient Greek ideas.

Table 2. Characteristics of ancient Greek ideas: Focusing on the three principles

Idea	Principle of fullness (logical, afterlife)	Principle of continuity (temporal)	Principle of self-fulfillment (divine attribute)	Chain of being, principle of linear hierarchy
Plato's idea of the good (absolute, infinite, perfect, inexhaustible source)	The idea of the absolute good is a necessary reality, for it is logically inevitable that from an absolute and infinite being all possible relative and finite beings are produced [5].	Infinitely possible, so sufficiently filled with intermediate forms that they continue [5].	The idea of the absolute good is strong on the principle of fullness.	From the ideology of the good (downward), we move on to the question of the individual's existence itself [7].
Aristotle's idea of prime movers (self-fulfilling prophecies)	The prime mover is a celestial agent of motion, but it is indifferent to output and therefore cannot provide a principle of fullness [5].	In the late Middle Ages, it was combined with Plato's principle of fullness and the principle of conjunction and succession [5].	The driving force of immobility is self-fulfillment [5].	from the individual to the prime mover, God (upward), which is the pure form [7].
Plotinus idea of the highest being	The goodness of a whole is established by the diversity of its parts [5].	The supreme God-mind-soul (man) is the product of various things (nature) [5].	Having reached its own perfection from the self-fulfilling Absolute, inevitably, other things arise as far as possible.	It is explained as an outflow from the (downward) ultimate One, from which all things in the universe are formed [7].

For something to exist, and for it to be perceived as existing, it must have a boundary, and that boundary is made possible by bringing together what it is and what it is not. In other words, the existence and recognition of a phenomenal thing is established by its negation. It is a relative thing, a finite thing, in the sense that it is established as such only through its boundaries, through what it is not.

If the existence of an individual entity is determined by a broader horizon that encompasses its limits, and if the expansion of that horizon is boundless and infinitely retrospective without a conclusive boundary that prohibits further enlargement, then the absence of such a boundary complicates discussing the non-existence of the universe as a whole. Therefore, if we accept the existence of individual objects as something that is clearly not absent, then the universe as a totality of objects must also be absent, which in turn tells us that there cannot be an infinite retrogression of boundaries, i.e., the universe as a whole must have boundaries. Thus, traditional Western metaphysics considers the universe as the totality of phenomenal things to be itself bounded and finite. If the universe is finite, it is because it is bounded by something beyond the universe. The finite is relative as that which has a counterpart and is limited by that which is bounded, that which is beyond the limit.

On the other hand, that which is beyond the universe that borders the universe must itself be absolute and infinite, not relative and finite (the principle of fullness and self-fulfillment). This is because neither the source of the universe's existence nor the boundaries of its scope should be infinitely retroactive [8].

In other words, this perspective acknowledges the existence of an infinite reality beyond the finite universe. The emphasis is on the absolute and infinite rather than the relative and finite, constituting the reality beyond the universe. This universal ideology sets ancient Plato apart from viewing the universe merely as a collection of concrete individuals. If all observable objects in the phenomenal world are relative, deriving their existence and recognizability from something external to themselves, then the idea exists inherently and is self-recognized (self-fulfilling). Extracosmic beings that demarcate the phenomenal universe as finite and relative are considered to be ideas [8]. Aristotle thought about the finite celestial sphere. The reason why the stars do not fall from the sky was thought by the ancient people to be inevitable. Aristotle saw the outside of the celestial sphere as the infinite realm of the gods, leaving the universe as a finite entity.

For Plato, the celestial bodies of stars and planets are the least polluted of the material world because they are in the sky, close to the boundaries of the universe. The heavens must be perfect. Therefore, it should be unchanging. Plato's solution was to have the geometers and astronomers of his day "rescue the apparent phenomena" of the heavens. To preserve their perfect and unchanging nature, he assumed that the heavens were perfect spheres revolving in concentric circles around the Earth. In addition, according to ancient Greek theology, which placed humans in a microcosm and the universe in a macrocosm, the universe must have boundaries just as we humans have boundaries unless we are invisible. In addition, it can be said that a psychologically bounded universe gives us a sense of psychological security. As a result, it can be said that modern inertia was difficult to recognize from the psychological perspective of security [9].

Aristotle also believed that the natural movement of the celestial bodies, driven by a desire to emulate the unchanging cause of pure form, along with the Earth's natural movement in pursuit of order, encapsulates a cosmological perspective prevalent throughout ancient Greece. This perspective presupposes a static universe governed by rationality.

5. Plato and Aristotle's view of nature centered on change

Plato explained the principle of change by saying that everything in this world changes and passes away under the influence of time and space, but in an ideal world that exists independently of time and space, there is an unchanging truth called the Idea. We can never fully achieve an ideal goal, but we can always aspire to it and strive for it. Ideas can serve as a purpose or guide for navigation, for example: the North Star from a ship at sea. Of course, the ship can never reach the North Star, but with the North Star as its guide, the ship continues its voyage over rough seas without stopping. That is life, and that is Eros. Everything in this world that we see and feel is a formula or imitation of the original, unchanging form. By the formula of the Ideas, the variable objects of the sensory world are considered to be beings only in the sense that they are a mixture of being and non-being, and only in that imperfect sense. In other words, Plato assigns to the objects of the variable world the purpose of change by the formula of the Ideas and the purpose of change by the imitation of the Ideas.

The ontological question that Aristotle's principle of change asks in order to overcome Parmenides' and Plato's views of the material world is the following: "Since the world around us is apparently full of change, what is the obvious reason why such change in the world is not an illusion?" The answer is: "(a) Since the universe, as we know through the power of our senses, is in fact a purposeful world that is directed toward an immanent form that must be the perfect and immutable best, then, of course, the changing material world around us is a true world; (b) above all, the Idea is static, not dynamic." Since substance and form were static principles as constitutive principles of being, the modalities of potential and actual states are introduced to account for the dynamic principles of the real world. Aristotle's problem is how to bring the world of changing phenomena, which are not necessarily the same at any given moment, into the realm of philosophical knowledge, so as to secure the immutability that philosophical knowledge requires. Aristotle's answer to this problem is two interrelated concepts in his philosophy: the concept of immanent form and the concept of *dynamis* [11].

The purposeful nature inherent in natural entities is considered as the principle of change and, further, as the principle of change in nature [12]. Aristotle expressed a purposive view of nature. He believed that all organisms change and develop in order to acquire some natural telos, that is, some purpose or function. Therefore, when trying to explain a phenomenon, it is necessary to grasp the "purpose for which it exists" first. Therefore, he was not concerned with the nature of the thing itself, but with the relationship between the thing

and the thing, and the process of instrumental change of the thing through time and space, in other words, the nature of the thing that exists. As a rational animal, man, unlike animals, tried to use the visible material world as a tool for social survival (actual state), but at the same time, man also tried to possess the invisible mental world (latent state) as the purpose of his life. Therefore, Aristotle came up with the concepts of actual existence and potential existence. Aristotle says that in the real world, our material world is a continuous process of "change" in which matter develops into form. Change and development require a transition from potentiality to actuality. But for Aristotle, if the form of a thing does not change, it remains unchanged. Every individual physical entity is a combination of matter and form. The function or purpose of an individual object as a result of its form is its purpose.

Where does change and motion come from? Movement in the world is useful as an explanation of the origin of motion, the "immovable cause" of pure form, but it is still insufficient as an explanation of by what intelligence all things in nature are made and works so perfectly. In the analogy of the bronze statue, the purpose, or end, of the bronze statue comes from the sculptor. The sculptor has a reason for making the bronze statue. In the human world, purpose is easy to find, but the same question cannot be asked of nature. Who is the being who designed everything so rationally? If the earth is made, then there is a creator who is the "driving force" for this earth, but who is this creator? And if we find the purpose for which the earth was made, then what is the purpose for which the universe was made?

As Aristotle delved deeper into the world, he came to the question of God. God is a kind of pure form, a being that can define matter. Furthermore, since God is a being of perfect goodness and beauty, which all things in the world strive for, he is the cause of the movement and change of things, giving rise to the purposivist idea of an immovable cause.

How far did Aristotle want to extend these purposive explanations? What causes are inherent in natural motion?

Not all motion of all things is purposeful. A tile sliding off a roof is not intended to hit someone on the ground, nor does it have any other purpose.

But Aristotle thought that, given the chance, all natural things would perform some motion, their natural motion. This is to substantiate the view that there is a purposive disposition inside everything [13]. For example: "The grand proposition is that the natural tendency of all things in the interior of the universe to move to reach their proper places is purposive, their natural places are their natural goals [14] (Grand Thesis)"; Chalk, which is a component of limestone, falls to the surface from a high position (Subthesis)"; "There is a natural motion inherent in the fall of limestone, which is a component of chalk, to its proper place, the surface (Conclusion, Claim)."

Both Plato and Aristotle believe that something fixed exists and that it is important to pursue it. However, in the Aristotelian-Scholastic tradition, form is thought of as knowing both form and substance (monism), as opposed to the Pythagorean-Platonic tradition, which places form above substance (dualism). Plato starts from an abstract geometry without substance. Aristotle, on the other hand, is based on observable biology, which has substance and form. The key distinction between Platonism and Aristotelianism in accepting the reality of universals lies in their understanding of the relationship between universals and individuals. Plato perceives universals as transcendent beings that exist sequentially prior to individual beings. According to him, universals are not dependent on the existence of the individuals they characterize. Plato's model of universals is derived from mathematics, and he envisions them as objective entities existing in a realm beyond the physical world. Aristotle, while also a realist like Plato, views universals, or the Real, as dependent on individuals for their existence. Unlike Plato, Aristotle situates universals within the world and sees them as intertwined with

individual entities. Aristotle's Forms are real and can be found within the world, existing in the present moment. According to Aristotle, forms only exist within objects that we encounter directly, known as the "object theory of form." Plato's Ideas, on the other hand, are true entities that exist outside of objects. This position is known as "entity-formism."

6. Aristotle's static view of the universe and its relevance to education.

It is not hard to understand how the term metaphysics, as used by Aristotle, came to converge with religious and mystical traditions. Plato's realm of Ideas is not conceptually very different from Heaven, which is ruled by a perfect god. Furthermore, the material world, which imperfectly reflects the realm of the Ideas, fits with the belief that humanity has fallen from divine favor. It is an aversion to change, not progress. It is a belief that time and space are fixed rather than changing, but that nature within them is imperfect.

In ancient Greece, the idea of a species was predicated on the idea that it had no beginning and never changed. Darwin removed this sense of eternity and perfection from species. This is very radical because he wanted to expose the fiction of the perfection and eternity of the ideal world. He saw Aristotle's eternal and immortal taxonomy and science as temporary.

Rather than a metaphysical view of the universe as fixed in time space and species, Darwin saw change as a normal part of creation and its possibilities. In this way, he broke with Plato and Newton. Darwin described a metaphysical dialectical mechanism by which species could change over time without the supervision of an intelligent designer. Furthermore, Darwin saw evolution as a process of randomly expanding the boundaries of possibility forever, as if it were not planned, and as an ever-evolving process of experimenting with new species and filling new spaces with natural creations [15].

Metaphysics literally means "things that are beyond this world." For Aristotle, the study of metaphysics sought to discover the eternal laws and principles that govern the forms and phenomena of this world.

This unique view of change as a phenomenon that occurs only in the material realm led to the concept of essential properties. Plato and Aristotle established two categories of change [15].

The first category involves change directed towards essential attributes (essence, substance, to be), which is the concept of development. Since all living things strive for an idealized form, natural development is seen as a progression toward perfection, i.e., the universe is purposive, proceeding according to some ultimate design. Science is primarily about categorizing shapes.

The second category refers to all changes in matter that occur primarily according to their accidental nature (accidental, to happen). Anything that deviates from random and natural development, or disturbs that development, is problematic and corrupt.

The gist of the metaphysical attitude is the notion of believing in a transcendent ideational realm that sometimes guides physical experience. It is the belief that such a realm can be reached by some mental endeavor, such as logical deduction or spiritual discipline. Above all, it is an attitude toward knowledge that does not develop toward perfection, an aversion to change, not progress, and a dichotomous view of form. These attitudes are the basis of traditional teaching practices, where the act of teaching is the direct cause of learning, the act of teaching the learner, and the concept of the student as a misconception.

Plato and Aristotle, who summarized the metaphysical ideas of ancient Greece, did not distinguish between matter and spirit, saying that everything has a soul. They believed that the most desirable social order was the one that changed the least, so they did not have a worldview that pursued continuous change and growth. Aristotle conceived of the world as an organism, which means that he had a purposive, organic

worldview in which all things, like humans as organisms, have an inherent purpose. Aristotle had a static view of the universe in which knowledge does not change and each has its own place according to the hierarchy of purposes. Therefore, it can be said that it is different from the direction of modern education, which emphasizes the process of growth as learners constantly change themselves according to changes in the surrounding environment (**Table 3**).

Darwin, on the other hand, saw change as a normal part of creation and its possibilities. He explained the evolution of nature as a process in which nature is always trying to be something else, constantly expanding its possibilities and boundaries more randomly than by plan, filling new spaces with its creations and trying again and again with new species, without the help of an intelligent designer, a mechanism that allows species to change over time. The concept of change advocated by Darwin is about interrelatedness rather than difference. This view of teaching and learning emphasizes the need to engage, facilitate, enable, and create opportunities or triggers for learning to occur, rather than the traditional act of teaching. Teaching that facilitates and expands the realm of possibilities is a good fit for constructivist learning. This is the difference between teaching and learning based on the ancient Greek conceptualization and teaching and learning based on Darwin's modern dialectical evolutionary theory (**Table 3**).

Table 3. Differences in teaching-learning perspectives according to different worldviews

Classification	Metaphysical concept of ancient Greek ontology	Modern dialectical evolutionary theory
Perspective on existence	The universe is understood as already completed or planned, ideal, and inevitable. It relies on the development of dichotomous logic (cutting branches).	The universe is explained as diversifying and emerging, using the logic of bifurcation (branching) which is related to how phenomena are interconnected and associated.
Teaching behavior	The crucial aspect of teaching behavior is the "direct cause of learning, the act of instructing the learner."	In teaching behavior, important aspects for learning to take place include "participation, facilitation, enabling, and creating opportunities or occasions" (teaching actions that promote and expand the realm of possibilities).
Significance of learning	Learning is a developmental process.	Learning opens up new perspectives of possibilities and transforms what has already been learned.
Perceptual perspective	Perception is explained from a perspective that separates the subject from the world.	

7. Conclusion

Plato believed that the best way to understand the world was to interpret it in terms of geometry and mathematical regularities or use a rational approach based on abstractions extracted from chaotic reality. Plato's world is transparent and static. His world was a mathematical, geometric world; it was abstract; there was no place for the empirical in his philosophical world [10]. Aristotle, on the other hand, took a more mundane and practical view. He believed that we can understand the world by observing what is visible to our eyes. He believed that patterns of objects can be categorized according to regular principles (such as categories of being and the Four Noble Truths) [16]. Ancient Greek philosophers and modern scientists believed that the universe, ordered by God, must contain some simple principles.

Plato influenced Western mathematics and physics, while Aristotle primarily influenced biology. Above all, the belief that the natural world is governed by regular and orderly natural laws, despite its bewildering and seemingly ever-changing complexity, has become the foundation of Western thought.

Aristotle also made no essential distinction between nature and humans. According to Aristotle, nature contains within itself the principle of its movement or stopping. The end (purpose, form) comes before

the means. At this point, it becomes similar to Plato's Idea. This way of explaining things can be called teleological understanding. This way of explaining nature with purpose and meaning can be understood, but it is characterized by the fact that it is very difficult to predict. Therefore, we had to wait for the quantitative and mechanistic modern science of Galileo and Descartes, which further simplified nature and removed the meaning from it.

Aristotle's rationality, which means fitting to a certain end, is used as a principle to explain the existence of things, as well as human behavior, in a way that is suitable for a certain end. The acceptance of this rationality is called teleology, and the world is an ordered, static world filled with the purposes of individual things rather than change. It is opposed to the causal mechanism of Descartes, Galileo, and Newton's modern science.

However, the metaphysical view of ancient Greek and modern philosophy, the universe as already completed or planned, ideal and inevitable, relies on the development of a dichotomous logic of understanding (cut) and therefore has educational limitations from the current educational perspective as the basis for traditional learning in which learners' ideas and opinions are not respected.

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