

Exploration of the Concept of "Whatness" in the Physics and Substantial Metaphysics of Aristotle

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Received: 2023-04-22

Revised: 2023-06-24

Accepted: 2023-06-27

Published: 2023-07-01

The issue of substance is considered one of the most important topics in Aristotle's philosophy, and understanding it can lead to a better comprehension of the intellectual system of this great Greek philosopher. Aristotle built his philosophy on the recognition of ousia or substance, and all the pillars of his intellectual system, including ontology, epistemology, theology, and cosmology, depend on the essence and form, which in his philosophical system are equivalent to ousia and substance. Thus, it can rightly be said that Aristotle's philosophy is a substantial metaphysics. In Aristotle's metaphysical thought, the essence and whatness always indicate a form of substance, or in other terms, "this thing here." Therefore, the essence and whatness are absolutely predicated upon substance. As Aristotle states in his discussion of definition, the definition pertains solely to substance, and the definition of other categories follows from this. From this perspective, it can be said that whatness pertains only and exclusively to substance, and by this substance, he means substance in its primary sense. Hence, in the present research, we seek to explore Aristotle's thought regarding the scope and whatness of an object and to show the implications of his theory in physics and metaphysics, addressing the question of whether the whatness of an object is precisely the object and its substance, or something else.

Keywords: Substance, Ousia, Substantial Metaphysics, Existential Metaphysics, Aristotle.

How to cite this article:

Mohammadlou, M., Jamali, G. A., Akhlighi Fard, M., & Seyed Mozhari, M. (2023). Exploration of the Concept of "Whatness" in the Physics and Substantial Metaphysics of Aristotle. *Interdisciplinary Studies in Society, Law, and Politics*, 2(3), 82-89. <https://doi.org/10.61838/kman.isslp.2.3.10>

1. Introduction

When the discussion arises about the "whatness" or essence of objects and phenomena, whether in a physical or metaphysical context, we see that realities and phenomena may sometimes not exist and simply fall under the category of potential beings, or sometimes some of them are influenced by other phenomena. From this perspective, what remains unclear is: what are these objects? Or in other words,

what are they, so that we can then ask whether there is a category that influences all these "whatnesses"? Providing a clear answer to such a question is not an easy task, because to answer it, there are numerous criteria and options, such as substance, the object itself, being, void, existence, or specific entities, among others (Retler & Bailey, 2017). The use of each depends on the physical or metaphysical domain. In the physical realm, addressing this issue is generally somewhat easier compared to metaphysics, because physical objects are



the most recognizable or, in other terms, the most apparent objects (Goswick, 2022). For instance, if we ask a child to show us some physical objects, they will immediately and without hesitation present us with dozens of examples of physical objects and can give a superficial explanation about their whatness. However, if asked to define a "metaphysical object" and demonstrate the distinction between a physical and non-physical entity, they cannot (Peirce, 2009). From this perspective, it is said that when the discussion pertains to the reality and whatness of objects and phenomena in metaphysics, one of metaphysics' tasks is to precisely examine the limits of reality to answer the question: what is the boundary between whatness and metaphysics? Thus, it is necessary here to answer two subsidiary questions: What is metaphysics? And what is the whatness of an object? This will help clarify the position of whatness in physics and, on the other hand, in Aristotle's substantial metaphysics.

2. Aristotle's Substantial Metaphysics

In common and popular culture, the initial definition of metaphysics is "phenomena or objects that follow physical phenomena" (Galluzzo, 2017). However, according to Aristotle, metaphysics is the study of nature and ourselves. In this sense, he blends metaphysics with the world of sensory experience, the place where we live, learn, know, think, and speak. In this thought, metaphysics is the study of being, that is, the study of the different ways the word "being" is used or the primary type of existence of "whatness," which conveys the nature of that thing (Wilburn).

Therefore, metaphysics involves studying the general principles of existence, being, and the abstract qualities of existence itself. Aristotle's metaphysics perhaps starts by rejecting Plato's theory, which states that material objects are changeable and not real in themselves but correspond to a common, ideal form that is eternal and unchangeable, and this form can only be understood by reason. Thus, something beautiful in this world is, in fact, an imperfect manifestation of the form of beauty. Aristotle presented numerous arguments against this theory. Ultimately, he dismissed Plato's views as poetic yet empty language and preferred to focus on the reality of the material world. He demonstrates in metaphysics that sensory materials that exist are first examined by philosophy, not physics (Aristotle, 1966). At this point,

this issue may create ambiguity for the reader, as they might ask: Isn't metaphysics something distinct from physics, nature, and matter? How is it then that it also deals with sensory materials? In response to this potential question, we say that it is true that metaphysics concerns non-sensory substances and the study of unchangeable reality, but it must be noted that metaphysics studies the nature of being as the common nature of all beings. Therefore, when we ask what metaphysics fundamentally pertains to, the answer is: "the actual or formal element in both intelligible and sensory existence," or in other words, the study of substance (Aristotle, 1924).

2.1. Terminology of the Concept of Substance

To better understand Aristotle's substantial metaphysics, it is essential to examine the concept of substance—since the concept of substance is the key term of his metaphysics—to clarify Aristotle's conception of substance in the next step. The concept of substance is fundamentally a philosophical term that has been widely used, but it seems that in the application of its true meaning, it has often been distorted. There are generally two ways to interpret and describe this term: first, it is said that the philosophical term "substance" in its general sense corresponds to the Greek word *ousia*, meaning "being," which in Latin is called *substantia*, meaning "something that underlies objects" or, in other words, the underlying subject. Accordingly, in a specific philosophical system, substances are things considered the fundamental entities or the foundation of reality. Thus, for an atomist, atoms are substances, as they are the basic things from which everything is made (Robinson, 2004).

In the second way of interpreting this term, scholars have given a more specific meaning to substance, based on which substances are a specific type of entities that some philosophical theories acknowledge while others do not. In this sense, the question always arises: Are fundamental entities substances or something else? Such as events or properties that exist in space and time. This conception of substance arises from the intuitive notion of an object or individual entity, which is primarily contrasted with properties and events. The issue is how to understand the concept of an object and whether, in light of a correct understanding of it, we arrive at a particular criterion of substantial definition or whether

it should be described with more basic terms. For example, can an object be considered nothing but a set of properties or a set of events? (Robinson, 2004).

Based on the theories presented regarding the concept of substance, it can be said that the theory of substance is an ontological theory stating that objects are composed of a substance or attributes borne by the substance but distinct and separate from it (Benovsky, 2008). In this interpretation, there is always a material that can be considered as a substrate or a thing-in-itself. Thus, substances are entities that are ontologically independent, meaning they exist on their own. However, one of their defining features is their capacity for change, and these changes include what exists before, during, and after the change. They can only be described when, under appropriate conditions, a persistent material acquires or loses properties. These properties or attributes are also entities that can be exemplified by substances, as attributes and properties express their bearers, meaning they indicate what their bearer is and how it is (Langton, 2001).

2.2. Aristotle's Criterion of Substance

In his metaphysics, Aristotle argues for a new method regarding the ontological priority of substance, and in his other works, he grapples with the question of what substance is. As we have previously mentioned, Aristotelian metaphysics is a science that studies unchangeable existence and reality. In this sense, it differs from other sciences that only study a part of being (only some existing things) or study beings in a specialized way (for example, only as far as they are changeable). In his metaphysical perspective, Aristotle resorts to substance to explain existence and being, stating that to understand the existence and being of a thing, we must know what its substance is. In response to the question of what substance is, Aristotle calls it *ti ên einai*, meaning "what it must be" for a thing. This phrase astonished Roman translators so much that they coined the word *essentia*, and it is precisely from this Latin term that we have derived other meanings of substance. Aristotle also sometimes uses another phrase, *ti esti*, meaning "what it is," and in his logical works, he employs the concept of essence, combining both terms to reproduce a new meaning: substance is "what, in relation to itself, belongs to a thing inherently (*en tōi ti esti*)." He continues by stating that this is the essence, meaning

"the essence of each thing is that which is said to belong to it inherently." Here, it is important to note that, according to Aristotle, humans always define things, not words. For example, the definition of "tiger" does not tell us the meaning of the word "tiger" but tells us what it means to be a tiger, what a tiger inherently is. Therefore, the definition of the tiger expresses its substance, meaning "what it must be" or "what is inherently predicated of the tiger" (Cohen, 2000).

Aristotle also uses the term "substance" (*ousia* in Greek) in a secondary sense to refer to genera and species, understood as "hylomorphic" forms. However, in its primary or first meaning, he considers it in terms of his substantial category, as something that is not predicated of a subject—in his words, the underlying subject—such as when we consider an individual human or individual horse. In another sense of substance, he considers it as the genus or type, for example, of humans and animals. Although humans and horses are of the same genus, they possess characteristics and attributes that are secondary substances, which at first glance are regarded as substances (Ackrill, 1988). This is precisely why, when examining Aristotelian thought, we see that substance has multiple meanings. When asked, "What is substance?" the first answer is essence, but with specific conditions. Aristotle, in Book V of *Metaphysics*, defines substance as the ultimate substratum, upon which everything else depends. However, the Greek philosopher does not stop there and explains that the concept of substance, like being, has other meanings (Van Inwagen, 2020), and these meanings differ depending on the domain in question. For example, substance in Aristotle's logic differs from what is proposed in his metaphysics. In *Metaphysics*, Book Zeta, he says: There are many meanings and perspectives on substance; for instance, some consider substance as truthful corporeality. Therefore, not only do they consider all animals and plants as substances, but they also label natural bodies like water, earth, etc., as substances. Alternatively, some view substance as the ends and limits of bodies, such as surfaces, lines, and points, claiming that these descriptions, in terms of substance, take precedence over the bodies themselves (Lotfi, 2020).

In general, Aristotle uses the term substance in three senses based on the subject matter, two of which pertain to natural sciences and one to first philosophy. In this

division, he first states: substance is either sensible or non-sensible. Sensible substance itself is divided into two types: eternal sensible substance and perishable sensible substance. The characteristic of sensible substances is that they are subject to change; therefore, they require a subject, because change always begins from a medium, which is the material or subject. Both types of sensible substance are related to movement, whereas non-sensible substance, which is the subject of first philosophy, does not share a common origin with the other types. An important point to consider here is that, since sensible substance is accompanied by movement, it will be changeable, and whatever is changeable transforms from one thing to another. The thing for which the change occurs is the material or the medium and subject we mentioned. On the other hand, the thing that change leads to is called form. Therefore, Aristotle's categorization of substances can be summarized as follows: he recognizes three substances—matter, which in appearance is "this thing"; second, the nature of the thing towards which movement occurs and culminates; and third, a singular substance that arises from the combination of the first two types (Lotfi, 2020).

2.2.1. *Boundaries of Substance, Matter, and Form*

According to Aristotle, substance is a particular thing along with its attributes. Substance is matter, and secondary categories or properties are form. Substance consists of matter and form, and since the domain of form is not clearly distinguishable, there must always be matter. To better explain the relationship between substance, matter, and form, Aristotle states that everything in the world is composed of two principles called matter and form. Matter is the element from which something is made. In this conception, everything that exists in the world is composed of a material principle: humans, animals, bacteria, a computer, etc. According to Aristotle, such matter is an indefinite principle, and its primary feature is that it is the basis for all becoming or all change, and in this sense, matter is also equated with potentiality. When explaining the second element or principle, form, he says that it is what determines matter and makes it a unique entity, such as a human, stone, animal, etc. Therefore, it can be said that form gives existence to matter. This is why matter and form are also related to the principles of actuality and potentiality—

matter is potentiality, and form is actuality (Aristotle, 2001). From this, the following can be deduced:

- a) Matter is equivalent to substance because if you take away the whatness of a thing, meaning everything except the matter—which is not a specific category, i.e., not quantity, thing, or a particular category—nothing remains of it. In this case, matter will be something that cannot be predicated of anything else, and it is precisely here that it becomes synonymous with Aristotelian substance (Lotfi, 2020).

- b) According to Aristotle, form, the external shape, appearance, or configuration of a thing, while distinct from the matter from which it is composed, cannot exist without that matter. Therefore, in Aristotelian metaphysics, although matter is regarded as a potential principle without which form cannot exist, it is form that gives meaning to the thing (meaning the "thingness" of a thing is its form). For example, a brick, which is potential matter for a wall, only becomes meaningful when placed in an organized framework—form determines what the brick will become. Here, matter is merely a relative term, something that exists potentially in a given thing but only becomes that thing when an appropriate form is given to it (Van Inwagen, 2020). In fact, according to Aristotle, form and matter are common principles that constitute all actual things (substances). Form (which he often equates with essences) exists in real things. The human mind, equipped with rational power, can abstract these substances from real things to understand them (the world). Thus, for Aristotle, form is a specific structure (morph) that gives objects and things their properties or characteristics. On the other hand, matter is the ultimate substrate or "material" from which all (physical) things are made. For this reason, Aristotle introduced his hylomorphic theory, according to which all actual objects or substances are explained based on the principles of form and matter (Aristotle, 1941).

- c) In his *Metaphysics*, Aristotle places form above matter and states that although matter is the primary undifferentiated element from which everything is made, it is not itself a "thing," and to become a thing, it must possess some form. Therefore, matter cannot exist without form, or as Aristotle would put it, matter is pure potentiality rather than actuality. Pure or "prime" matter is the potentiality from which things arise without being actual entities themselves. While matter is what things are made of, it is form that gives them definite shape and

structure and determines their various powers and functions. Here, Aristotle provides the example of the birth of animals or humans, explaining that in the birth of an infant, the female's menstrual fluid provides the matter, while the male's semen gives it shape or form. Together, they create a new entity of a specific kind. Ultimately, Aristotle concludes that the prime mover is pure form, entirely separate from matter, eternal and unchangeable, as it is both the efficient cause (or mover) that moves everything and the final cause to which everything is directed (Aristotle, 1941).

3. The Essence of an Object

As we know, providing an accurate definition for an object or phenomenon can help in better understanding it, because, according to Aristotle, science and knowledge are universal, and their comprehension depends on the precise definition of objects and phenomena—in other words, a correct understanding of the "essence" of an object. Aristotle believes that to achieve such understanding, we must categorize our observations of phenomena based on an organized pattern. For example, he classified animals based on characteristics such as whether they lay eggs, their type of movement, their habitat, etc. (Aristotle, 1991). This kind of classification is a way to grasp the essence of a thing. Therefore, we have a specific animal, and we can determine which group it belongs to. It is precisely at this point that Aristotle identifies the goal of philosophy as understanding the essence of things and asserts that understanding the essence of a thing means the ability to define it. We can define everything: humans, art, happiness, and so on. However, what makes definition possible, in his view, is that a thing or object is always identified with a cause, which Aristotle introduces in four forms, or what are known as the four causes (material, formal, efficient, and final) (Ackrill, 1988).

The main reason for this, according to Aristotle, is that nature, which contains objects and phenomena within itself, has a hierarchy. If this hierarchy did not exist, our understanding of their essence would not be possible. Therefore, if we want to truly understand something, understanding its relation and importance compared to other things is crucial, and this reveals the existence of causes. To better understand the idea that everything has an essence, consider this example: when we want to comprehend the essence of living beings, we categorize

them based on life forms and state that there are four types of life: 1) first, a nutritive process in plants, which absorb food and reproduce; 2) second, a nutritive and sensitive process for animals, which absorb food, reproduce, and can sense things; 3) third, the movement of higher animals, which, in addition to other powers, can move; and 4) finally, rationality in humans, who do all of these things and also can use reason. In this example, we see that Aristotle applies a hierarchy in the physical world for physical beings, in such a way that as we move from plants to animals and finally to humans, we see an increase in intellectual power. The highest development on Earth is human reasoning or thinking. Aristotle believed that celestial bodies, which he regarded as gods, have greater understanding than humans. These celestial bodies were made of an element called aether and lacked the ability to eat, drink, reproduce, sense, or feel pleasure and pain; they only thought. Therefore, at the highest point of this hierarchy is a deity that represents pure thought, pure actuality (as opposed to potentiality), and the highest level of growth, followed by humans, then animals, and finally the lowest point in the universe. Each phenomenon in the world, based on its rank and aided by a cause, strives for perfection, and it is through this process that it is recognized and defined. For instance, everything an animal does is aimed at fully developing its potential. Everything strives for this state of pure awareness. Aristotle calls this the unmoved mover: the final cause of everything, including motion and change. The unmoved mover draws everything towards itself, as everything changes in an effort to reach the unmoved mover/deity (Wilburn). Therefore, in this perspective, understanding the essence of an object first depends on its hierarchy and then on its cause.

4. The Substance of "Matter," "Essence," and "Physical Changes"

As we know, Aristotle considers physics as one of the three divisions of theoretical sciences and equates it with natural philosophy or the study of nature. From this perspective, Aristotelian physics not only encompasses the modern field of physics but also biology, chemistry, geology, psychology, and even meteorology. By posing fundamental questions about nature and the methods needed to study it, he developed a cosmological theory that examined all phenomena, both natural and non-natural. In this regard, Aristotle viewed physics as an

essential understanding of the essence and nature of matter, change, causality, time, and space. From this point of view, he considered the role of physics to be the explanation of all these elements in nature, because, in his view, physics is nothing but a precise observation of nature, which is the very concept of essence (Aristotle, 1970).

Aristotle's approach to explaining nature was to answer the question of "what" and "why." He believed that people always ask four types of questions regarding the whatness and why of everything in nature, and each question requires an answer that reflects a specific cause. Consider an example that covers these four different causes: "Why does a knife cut meat?" If you respond that the knife is made of iron, which is harder than meat, you are addressing the material cause. The explanation that the knife has a sharp blade provides the formal cause. If you describe the mechanism by which the knife separates the meat, you are addressing the efficient cause, and if you say that the knife cuts meat because it serves a purpose, you are addressing the final cause. Therefore, to answer the question of whatness and why, we must find all four causes or, in other words, answer all four questions (Aristotle, 1991).

In defining the essence of natural objects, or things that have a nature, Aristotle states that these types of objects grow only through internal causes, meaning they have an inherent tendency to move (or change) (Aristotle, 1970), while artifacts are made by humans according to external human purposes. For example, natural objects include stars, animals, plants, rocks, clouds, and raw materials, while artifacts include houses, furniture, fabrics, and tools. However, the distinction between these two groups is not simple. For instance, when a part of a chair breaks, it loses its original form, yet it still remains a piece of furniture and is still considered an artifact. However, when it becomes a natural object or a piece of matter, such as when the decay is a natural process determined by its raw materials and not caused by humans for a specific purpose, it can no longer be considered an artifact. This is why nature and the world cannot easily be divided into natural and artificial things—the division depends on how we understand them. In fact, according to Aristotle, since physical and natural objects are essentially composites of matter and form, the same applies to nature and physics, which must also be understood in terms of matter and form because

the goal of physics and nature is to comprehend change or the natural process, which can only be understood through changes in matter, movement, and form (Ross, 1960).

What seems somewhat ambiguous here is the question: If physics and nature are defined as processes of change and natural processes that involve matter, then for such a process, a subject must be necessary because matter alone is incapable of action or change. In response to this issue, we can say that Aristotle addresses this exact point in his theory of the study of nature or physics, stating that physics, like art, must encompass both matter and form. Just as a physician must understand both the nature of health (form) and the material components of the body, so too does matter serve as the means to relate to a purpose—though it must be noted that matter is only a relative term, and physics deals primarily with forms immersed in matter. On the other hand, since matter alone is incapable of movement and change, it requires a subject, and that subject is substance, which, in terms of quantity, is singular and unified but capable of receiving countless forms. Therefore, such substance is the source of change, essence, and matter (Aristotle, 1970).

5. Substance in the Sense of "Being as Being" or "Whatness" in Metaphysics

According to Aristotle, substance in its metaphysical sense, or "being as being," meaning something that exists solely in relation to itself, is the cause of all physical things, and form and matter are the intrinsic metaphysical principles of reality. Therefore, they cannot be understood as things themselves (Llano, 2001).

Aristotle believes that any knowledge which has a rational foundation—whether in the most precise manner or in a simpler form—is always in search of causes and principles. This means that all sciences seek to determine the cause of a particular "being" or a particular "genus," but not "being" in the absolute sense, or "being as being," or even the "whatness" of a being. Rather, they understand some things through sensory perception, and for others, they assume the "whatness" and in this way demonstrate things that inherently belong to a genus either more forcibly or more flexibly. Thus, from such an inductive approach, no proof regarding substance or "whatness" can be obtained. This indicates that, from Aristotle's perspective, the goal of

philosophy differs from other sciences, as he is always seeking the absolute being or being as being, which is the same as the "whatness" or essence of every being, even a particular one. He explains this by stating that the "whatness" of each animal, for instance, the whatness of cats, dogs, or cows, and even the whatness of humans, differs from one another. This means that the "whatness" or being as being, or the absolute being, for each of them is nothing but their specific form, which is composed of their specific form or determined matter, i.e., their genus, which in truth exists outside their thoughts and will and is inherently the cause of these beings, existing eternally. Therefore, the specific form is metaphysical, and metaphysical beings, in Aristotelian thought, are never derived empirically or inductively. As he emphasizes, not only can physics but also mathematics not address being as being or "whatness." Thus, he continues to write:

"If there is something eternal, immovable, and separate from matter, it is evident that knowing it is the work of theoretical science; however, it is certainly not the work of natural science (physics deals with movable things) and not of mathematics either, but rather of a science that precedes both. Because natural science deals with things separate from matter, but not immovable. Some branches of mathematics also deal with immovable things; however, these immovable things are not necessarily separate from matter but rather exist within matter. However, the primary science deals with things that are separate from matter (substances) and immovable. Therefore, all causes must be eternal, but especially these, because they are the causes of apparent divine things" (Aristotle, 2005).

6. Conclusion

Based on what has been discussed, we can conclude the following:

- First: The concept of substance in Aristotelian thought is the foundation of all reality, through which other fundamental concepts of Aristotelian physics and metaphysics, such as the essence of a thing, matter, form, potentiality and actuality, essence and accident, and so on, can also be formulated.
- Second: In considering Aristotle's physics and metaphysics, we can clearly observe that the Greek term *ousia* presents linguistic and structural challenges. Historically, it has been translated as *substantia*, meaning subject (*hypokeimenon*), while *essentia* refers to

what Aristotle coined as *to ti ên einai*, meaning essence. From this perspective, finding a precise answer to the question of the "whatness" and "why" of a thing, which depends on an accurate understanding of the term "substance," is somewhat difficult. The reality is that *ousia* was indeed used by Aristotle in both senses, but the author believes that further hermeneutical research is necessary to determine the most corresponding and accurate meaning in modern languages.

Nevertheless, from the research presented here, it can be understood that Aristotle, in his metaphysics, employs a secondary meaning of substance, which falls within the realm of mental categories, leading to a composite notion of substance. Perhaps the reason for this is that the criterion for substance differs between Aristotelian physics and metaphysics. On one hand, we are dealing with a form of subject analysis, and on the other, with a form of ontology. In fact, the "whatness" of a thing in Aristotelian physics is dependent on a subject called matter, upon which an individual substance is predicated. However, in his metaphysical view, which is always concerned with the being of being, this existence is primarily attributed to substance. That is, when asked what the essence of a thing is, or when the question of "whatness" is posed, the intended meaning is the foundation of the thing, but not in the way it is presented in his physics. Therefore, in his metaphysical view, Aristotle assigns a positive role to substance, meaning that substance is no longer merely a subject to which multiple predicates are attached.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

Acknowledgments

We would like to express our gratitude to all individuals helped us to do the project.

Declaration of Interest

The authors report no conflict of interest.

Funding

According to the authors, this article has no financial support.

Ethical Considerations

Not applicable.

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