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THE INTERDEPENDENCE OF PHYSICS AND PRODUCTIVE ARTS IN ARISTOTLE'S EPISTEMOLOGICAL SYSTEM

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Abstract: This article reexamines the traditional assumption that theoretical knowledge, practical knowledge, and productive knowledge in Aristotle's epistemology function as separate and independent domains. By analyzing Aristotle's classification of the sciences-particularly the role of physics as a science of necessary causes-the study argues that productive arts (technepoietike) inherently depend on the theoretical framework provided by physics. The paper outlines how physics, by explaining natural processes and necessary relations through form, matter, causality, and potentiality, supplies the foundational principles that legitimize productive activities such as medicine, optics, and mechanics. Productive arts in turn integrate this theoretical component with empirical, experience-based practical methods. Through this relationship, the article demonstrates that artistic production is not merely imitation of nature but also its completion and purposeful continuation. Furthermore, the study shows that Aristotle's system anticipates modern distinctions between basic sciences and engineering, revealing the philosophical underpinnings of how scientific paradigms legitimize or delegitimize practical methods. The findings underscore that productive knowledge cannot be understood independently of theoretical knowledge, as the latter provides the necessary epistemic justification for the former.

Key words: Aristotle, physics, art, technē, theoretical sciences, paradigm, causality

Introduction: Aristotle begins Book I of Metaphysics with the idea that humans naturally desire to know. This statement, while not causal, does have a sign: The use of the senses, which are the source of knowledge, gives people pleasure. Aristotle then proceeds to explain the levels of knowledge in a hierarchical manner: at the bottom is sensory perception (aisthêton), above it is the recollection of repeated perceptions (mnêmê), experience (empeiria) resulting from the accumulation in memory, art (tekhnê) formed by knowledge, which is added to causal experience, and at the bottom is metaphysics, the pure knowledge of first principles and causes. But metaphysics is not only concerned with first principles and causes; it is also a science that investigates being not in terms of being in motion or being alive, but in terms of being itself. However, it is not the intelligent mortal or immortal beings (celestial spheres) that are not heard, but only the thinkable (noeta) and eternally real beings (pure forms), the non-existence of which is impossible, that is, God, the general form (the general form cannot be separated from being).) examines the celestial minds and the intuitive mind (nous) in man.

Aristotle's Metaphysics, Chapter VI. In his book, he distinguishes these subjects of study from the other theoretical sciences of physics and mathematics. Accordingly, physics is the theoretical science that studies primary substances that are subject to formation and decay, have independent existence and forms that are not separated from matter; mathematics is the theoretical science that studies bodies that are motionless but cannot exist independently of matter (numbers and spatial forms that characterize primary substances); metaphysics is the theoretical science that deals with beings that are independent of matter and inert. Theoretical

sciences differ from arts (tekhnê), which use knowledge to produce benefits, and from applied sciences, which use it to control action; they do not use knowledge to make use of it. it is a means to some end. They seek knowledge for its own sake. Moreover, applied and production sciences deal with contingent things, while theoretical sciences deal with necessary things, in other words, things that cannot be otherwise. Hence, the knowledge produced by theoretical sciences must be precise knowledge, or at least strive for precise knowledge.

Physics, in general, considers the general nature of objects, which have principles of motion and stability, and the immediate and remote causes of the change of these objects, under the category of necessity. But in Book II of Metaphysics, Aristotle emphasizes that mathematical certainty should be sought not in everything, but only in things that are not matter. Therefore, one should not strive for such certainty in the study of nature . Mathematical certainty can be used to make judgments about the properties of non-material bodies. The study of nature (physics), therefore, by definition, cannot have such certainty; because its object includes matter. Does physics then become a knowledge of natural laws that occur in most cases, except for exceptions? If so, how can it achieve the certainty that is common to theoretical sciences? Aristotle says: “Every science is concerned with things that either always happen or often happen (otherwise what would we learn or what would we teach others?). In science, a thing must be defined as something that always or often happens.”

Method: Because in the real sense there is only a science about eternal, unchanging and necessary beings, but in a broad sense one can also speak of a science about things that often happen. The science that Aristotle meant is physics?? In our opinion, it is not physics, but art that is meant; because art, not theoretical sciences, deals with the contingent, that is, it can be different. Theoretical sciences examine their objects under the category of necessity, and this is the reason and condition for their being a priori. Here it is necessary to clarify the subject of physics. Therefore, Aristotle discusses whether physics studies nature as matter or form. Physics is not pure matter or pure form; It studies forms that cannot be separated from matter, quantitative, qualitative and spatial changes in this matter-form unity, and the causes of these changes within the framework of the potential-actual doctrine.

On the other hand, if the ultimate cause of all change is form, physics is essentially the study of general form (nature or essence). But as has been said above, since general form is not cut off from existence, it is one of the eternal, unchanging pure forms. For this reason, Ross argues that the distinction between Aristotelian metaphysics and physics is very vague, and that physics should be described as a "metaphysics of nature" because it investigates a priori forms that are inseparable from matter. In this regard, the theoretical framework drawn by Aristotelian physics is that of general forms. The framework is not conditional, but speaks of necessary relations, and is therefore precise. Suppose that an observation was made to see an experimental analogue of the process predicted in the theory of physics regarding the physical change of humans, and a dwarf was encountered. The form of the human species involves a telos (goal) for physical perfection and the growth of the individual.

According to the physical theory, this is necessary, but according to the observational data, the theory was not realized. Based on this, an explanation is needed; in other words, the “natural process” conceptualized as “what should have happened” did not occur, and this must have caused the failure. This is the subject of medicine, which is an art. In general, physics deals with natural action, and art with supernatural action. The first claim of this article is that the mentioned physical theory constitutes the theoretical component of art. Based on this theoretical basis, there must be procedural knowledge about “how” to do certain activities, since art

produces results for the benefit of humanity. Such knowledge about the process is called the practical component of art. In our opinion, Aristotle distinguished between the theoretical component and the practical component of art as “epistêmê poiêtikê” and “tekhnê poiêtikê”. This is the second claim of this article. That is, the "known" part of production activity, which comes from physical theory, and the "contingent" part of production, which is based on experience.

Result: According to the distinction we have mentioned, if the physician is interested in an obstacle to an unfulfilled goal and in removing this obstacle, he must first know what the goal is and therefore have a concept of the "natural process" or "what should happen." This concept of the "natural process" gives him an idea of what can stop or disrupt this natural process and limits its effectiveness by regulating the way in which the treatment is carried out. In other words, this physical theory determines which treatments of the physician are legal and which are illegal.

Discussion: In this sense, the theory of physics, which is the criterion of the legitimacy of artistic activity, is the arch of art, that is, its starting point: the beginning of thought, but the natural state in which it is the goal (the final stage). about the activity. Since the absence of such a criterion means that the artist has no starting point for action and no principle (archê) that limits and regulates it, in this case the activity has no purpose and the artist does it without knowing why he is doing it. In this case, the activity he does does not have a Lawfulness; This situation gives rise to chaos, that is, anarchy (an-archê). The reason why some traditional methods of treatment are not legitimate in today's medicine is that these treatments are not principled.

Aristotle, in contrast to pure mechanism, believes that the whole is greater than the sum of its parts and that the parts should be studied in terms of the whole. Within this principle, Aristotle establishes a regularity in the relationship between art and physical theory. We will try to clearly demonstrate this regularity here.

Art Theory: Physics

Natural beings are always in motion, because they are material, but physics examines these objects not in the category of possibility, but in the category of necessity. Otherwise, what could have happened is not necessary: the phenomena that physics deals with are phenomena that necessarily happen. The phenomena that could have happened otherwise (contingent) are related to art, which is related to physics. Therefore, art is the knowledge of how one of the things that could have happened or not happened. The existence is not necessary, but the principle of these possible products lies not in the object itself, but in the artist who produces it. In objects whose existence is necessary, the principle or purpose is inherent in that object. However, chance should not be confused with a natural phenomenon that is not necessary, because chance is not the subject of any science. Consequently, its principle of action (form) is physics, the universal and necessary knowledge of the beings and facts that exist within it, and its principle of action is the knowledge of the conditioned facts and beings that exist outside of itself (art). For example, "Form is necessarily directed to its entelechy." "If there is materiality somewhere, there is certainly formation and destruction there." Such propositions are absolutely true. On the other hand, just as stone and iron have the ability to become a house, no medicine cures the disease to which it belongs, but rather cures it. Aristotle explains this in the Nicomachean Ethics with the following sentences:

"The subject of art is always creation, and to give oneself to art is to think about the way in which one of the things that may or may not exist, but whose principles of existence are not in the artist, but in the artist, is to think about the way in which one of the things that is created is

created. "Since art does not concern itself with things that actually exist or do not exist, it does not concern itself with natural beings whose principles are in themselves."

Imitation and invasion

Plato says that art imitates nature. The god Timaeus also imitates ideas. However, in the Republic, art seeks ways to control the processes in natural moving things, in other words, in objects that are material and subject to formation and destruction, in a way that gives man an advantage. For Aristotle, art. not only imitates nature, but imitates it in general. It also completes the work that nature left unfinished. Aristotle explains his position on art and imitation in physics with the following sentences: “Now, if there is no obstacle, everything has its own nature as it was created; It is done as its nature is.

However, it is done "because of something, for something"; so naturally it is "for something". For example, if a house were one of the objects of nature, it would be shaped in the same way as it is shaped by modern art; objects that come from nature, even if they are shaped not only by nature but also by art, are shaped in the same way as they are natural. So one exists because of the other. In general, art completes what nature could not complete, and sometimes imitates them. So if things related to art are for something because of something, then things related to nature are also clearly. Indeed, what happens before and after is related to each other in the same way in objects related to art as in objects related to nature. Art and nature are purposeful: The stages that must be observed in both formations are the same as in the formation of natural objects and artificial objects. Art goes beyond imitation and completes the unfinished work of nature. Completing the unfinished work of nature requires going beyond imitation of nature and reorganizing the natural processes in the object in a purposeful way. Here, two situations come into play, conceptualized as the theoretical component and the practical component of art. In this sense, Aristotle says that the theoretical component is the founding element, and the practical component is the productive element. Here, the source of the theoretical component is physics, and the source of the practical component is experience.

The art of mathematics

The art of medicine is not a mathematical art and consists of a theoretical component directly provided by the physical sciences and a practical component provided by experience. In other words, the science to which the art of medicine is related is physics. But Aristotle's line characterizes some arts as mathematical; because these arts are between physics, which deals with real things, and mathematics, which deals with abstract things, and these are optics, mechanics, astronomy, and music. Physical objects have surfaces, volumes, lines, and points, which mathematics deals with, but mathematics does not investigate these qualities as limits of physical objects.

Mathematics studies these properties by abstracting them from physical objects and motion. On the other hand, the art of mathematics examines mathematical objects not mathematically but physically. Aristotle argues that optics, the art of mathematics, operates on mathematical lines in a physical sense rather than in a mathematical sense. Aristotle makes a hierarchical classification of science in the Second Analytics: The arts of the lower order present empirical facts; these are the arts of optics, mechanics, music, and stargazing. The arts of the higher order are geometry, the geometry of solids, arithmetic, and astronomy; they explain their objects by mathematical proof. Optics is inferior to geometry, mechanics to the geometry of solids, music to arithmetic, and stargazing to astronomy. The former classifies phenomena, while

the latter provides a mathematical explanation of "how" that phenomenon occurs. According to Aristotle's philosophy, these arts can be used to mathematically describe physical objects and processes. Each proposition in these arts is based on mathematical principles and theorems, the principles of that art, and theorems previously proven in that art. The geometric lines used in optics can facilitate calculations by representing light rays, but they cannot answer physical questions such as "What is the nature of light?" or "What are the causes of optical phenomena?"

Conclusion

To test the validity of the above conclusions, the following question can be asked: What is health? Whatever the answer, what gives legitimacy to the definition of health achieved? In the Aristotelian system, health is defined as the balance of the four elements in the human body, namely heat, cold, moisture and dryness. So, did Aristotle arrive at this definition through experience? To increase the tension, one can go beyond the Mediterranean basin and ask about the definition of health in classical Indian medicine. As is known, in classical Indian medicine, health is defined as the openness of the seven chakras.

So, did Indian doctors arrive at the concept of health through experience? The science that gives legitimacy to these definitions is physics; that is, “why is nature as it is and not otherwise?”, which presents the general nature and common causes of separately observed phenomena as a whole. It is the science of physics that answers the problem. Going back to Aristotle, this science of physics consists of such small theories as the theory of matter-form, the theory of potential-actuality, and the theory of soul. In these theories, the emphasis is on doctrines such as the “natural earth,” the “closed universe,” the “indestructible heaven,” the “four elements,” “organic nature,” and the “immovable mover.” In the philosophy of science, this set of doctrines that underlie science is called a paradigm. When this paradigm changes, only the practical component based on experience remains, because physics, which gives legitimacy to the theoretical parts of art, also changes. A new science of physics based on a new paradigm can give new reasons for the practical components of art; He can declare illegal what he cannot give. The legitimate treatments, justified by the theoretical component that Aristotle's physics provides for the art of medicine, are positioned as "alternative" treatments for modern medicine. No modern school of medicine conducts research on these treatments; they are not used in modern hospitals. What justifies a medical treatment, then, is not its performance, but its justification by an existing physical theory. Unreasoned activity, that is, activity guided by knowledge of "how" without a theoretical component, is activity that does not know why it is being done. Since the successes it achieves are accidental, they are closed to development. The reason it prefers justification by physical theory to the benefits it receives is that the former is open to development.

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