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**The Evolution of Natural Cause:**  
A chance journey from Aristotle to Newton

8936 Characters

The Natural World is a vast and mysterious entity, remarkably filled with hidden structure, purpose, and wonder that the philosophers of the earth strive to uncover.

In his “Physics”, Aristotle decomposes nature into a material substratum (prote hyle) that separates a thing's substance (ousia) from its form (eidos) and teleological shape (morphe). Though a given body of nature has a specific kinesis, the kinesis alone does not provide enough insight to quench Man's question, 'Why?'.

In doing so, one wonders about situations where the outcome does not seem to follow from any eidos, kinesis, or morphe, or about seemingly natural variations in the world.

In the case where chance is thrown out and replaced with hyle, eidos, and kinesis, we see a connection between the basis of explanations for events and the essence of nature.

Though, we seem to have ignored a large subsection of interactions in the universe; those involving artificial bodies.

Classical Mechanics is the application of three of Aristotle's causes (hyle or ousia, eidos, and kinesis) to the union of nature and techne, creating a tool to analyze the physical world without a need to satisfy Aristotle's 'Why?'.

It seems that in our attempts to understand the universe through classification, analysis, experiment, etcetera, there always seems to be a hole in the theory where either one cause has many (observed) possible effects, or one effect has many (observed) possible causes.

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The Natural World is a vast and mysterious entity, remarkably filled with hidden structure, purpose, and wonder that the philosophers of the earth strive to uncover. In particular, two early philosophers spent a great deal of time contemplating the Natural World; Aristotle and Newton. Aristotle's Nature was one of substance, dynamics, cause, chance and inherent purpose. His method was to provide complete, exhaustive causes for as many of the natural effects as possible, while relying on the goal-oriented nature of nature to provide reason and direction.

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In his “Physics”, Aristotle decomposes nature into a material substratum (prote hyle) that separates a thing's substance (ousia) from its form (eidos) and teleological shape (morphe). He further uses the substratum to classify things by their dynamics (kinesis) with respect to substance and form, where kinesis encapsulates the motion through space, time, and form. In Aristotle's eyes, dynamics occur in bodies of nature via the properties and behaviors of the ousia of which the body is composed. It can be seen that these properties are what shape the dynamics of a natural body's eidos. However, a particular ousia that composes a natural body does not undergo kinesis itself. Rather, ousia are static through the kinesis of a natural body, and provide a basis for matter (hyle). Since the kinesis, hyle, and eidos are integral in determining a model for a body of nature, we can propose that nature is the superposition of the three. (Though, as I understand it, Aristotle is satisfied with just hyle and eidos).

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Though a given body of nature has a specific kinesis, the kinesis alone does not provide

enough insight to quench Man's question, 'Why?'. This is an interesting thought experiment, though, since a body's kinesis describes its motion through space, time, and morphology. There seems to be no need for additional information, since the kinesis can perform as a model for body in question. To quickly refute this, all models need initial conditions to provide them with a world to operate in. It is these initial conditions, plus the kinetic model, that find their way into Aristotle's four causes. And so, by observing the ousia, eidos, kinesis, and morphe, one can obtain enough information to exhaust all variants of the question.

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In doing so, one wonders about situations where the outcome does not seem to follow from any eidos, kinesis, or morphe, or about seemingly natural variations in the world. In these instances, Aristotle's four questions cease to be able to provide cause and require another explanation; chance. To handle an interaction that does not adhere to the cause-effect paradigm, chance happily provides an infinite number of causes in so far as there was no intention for the outcome to occur, so the 'forces' at work could be infinite. Looking further into said forces, it seems reasonable that one could still use the kinesis of whatever bodies were involved to explain a chance event. It's clear that only one of the four causes is actually missing in the spontaneous interaction – the essence or epitome of the interaction (morphe) – since the 'intention' for the bodies to attain that morphe never could have existed. So, without an end goal, it appears to be feasible to explain spontaneous effects, though perhaps not to the absolute satisfaction of Aristotle's 'Why?', with matter, form, and dynamics.

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In the case where chance is thrown out and replaced with hyle, eidos, and kinesis, we see a connection between the basis of explanations for events and the essence of nature. Although this basis, as noted above, does not provide explanations that require meandering outside of the physical world and into the intellectual or metaphysical one, it does provide a solid ground on which to build a model of the physical universe.

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Though, we seem to have ignored a large subsection of interactions in the universe; those involving artificial bodies. The dynamics of art (techne) have no innate tendency to change (no metabole), though techne still seems to embody principles of temporal, physical, and metaphysical motion (kinesis) that apply to it. This kinesis, according to Aristotle, occurs due to the matter found in the composition of techne, and that the substances of which techne is composed exhibit properties that are 'according to nature'. It follows, then, that all kinesis in the universe is an effect (though perhaps indirectly) of the properties of matter, and that the superposition of these properties provides a method for finding the kinesis of techne, which is in itself composed of a superposition of matter. Newton would seem to agree on this matter because he sacrificed studying the many causes of nature to study the effects of intra-matter interactions in The Method of Natural Philosophy, "We are to admit no more causes of natural Things than such as are both true and sufficient to explain their appearances. To this purpose the philosophers say that... ..Nature is pleased with simplicity and affects not the pomp of superfluous causes.", and went on to invent classical mechanics.

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Classical Mechanics is the application of three of Aristotle's causes (hyle or ousia, eidos, and kinesis) to the union of nature and techne, creating a tool to analyze the physical world without a need to satisfy Aristotle's 'Why?'. Why is a difficult question to satisfy with only information about the natural physical properties of a situation, which is often all that an observer can get. To elaborate, the case where there is no information other than the physical exists in far greater magnitudes than those where there is metaphysical or intellectual information to be had, considering that the majority of matter in the universe cannot think. However, Newton saw the metaphysical and intellectual as a superfluous distraction, without which he could definitively answer the same questions as Aristotle, though perhaps with a deemphasis on the intellectual interpretation of the answers. But here still, a simple though experiment can quickly find situations in which Newton's Classical Mechanics breaks down; a game of dice, or variations in Nature.

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It seems that in our attempts to understand the universe through classification, analysis, experiment, etcetera, there always seems to be a hole in the theory where either one cause has many (observed) possible effects, or one effect has many (observed) possible causes. This is absolutely understandable, and agrees with Libeniz's idea that we cannot possibly understand everything as we are not the omniscient being(s) that created the universe, but also provides insight into Modern Natural Philosophy (Physics) and the problems with their theories that they are trying to solve. The advent of the Physical Sciences has attempted to eliminate the

uncertainty of the world since its inception. After all, it is arguable that the intention of the Sciences is to explore and understand the unknown. And so, perhaps today, with modern techniques, we can model and compute the actual outcome of one particular game of dice, given accurate initial conditions, using Newton's original Classical Mechanics, but there still exist many uncertainties that remain unexplained. In particular, Quantum Mechanics has found its way into the crevices of Classical Mechanics and Electro-magnetics in an attempt to patch the holes left by elementary particulate matter 'rolling dice'.