

ARISTOTLE OF MACEDONIA AND THE LEGACY OF CRETE

DL EVERETT

DEVERETT@BENTLEY.EDU

"[I intend] to make a philosophy like that of Aristotle, that is to say, to outline a theory so comprehensive that, for a long time to come, the entire work of human reason, in philosophy of every school and kind, in mathematics, in psychology, in physical science, in history, in sociology and in whatever other department there may be, shall appear as the filling up of its details." C. S. Peirce, Collected Papers (1931-58); Peirce (2000, 168)

"There is a land called Crete, in the midst of the wine-dark sea, a fair, rich language, begirt with water; and therein are many men past counting, and ninety cities." Homer, Odyssey, Book 19, Line 148.

The subtitle to this biography is "The American Aristotle." We cannot support the inherent thesis of this title without understanding Aristotle's intellectual versatility, originality, intensity, or the value of his contributions to thought for the last 2400 years. Thus before going into a few details about the life of the great Greek, it would be useful to know what some of his accomplishments were. Those accomplishments range far beyond philosophy, though we begin with that.

Aristotle (by some etymologies his name means "best (aristos) purpose or end (telos)" is nearly universally acknowledged as the founder of formal logic. His syllogisms, which are an important part of the story of Peirce's own life, were a major, historic development in the

intellectual history of the entire world. The crucial component of the syllogism is the establishment of deductive logic, showing that some conclusions must follow if the premises are correct.

Aristotle also was an early explorer of the "nature of reality," metaphysics. He it was who first established the significance of the understanding of substance, essence, and potentiality vs. actuality. More importantly, perhaps, than merely being among the first to seriously think about these topics, he embedded his considerations into a philosophical framework. As Russell (p155, said of Aristotle, "He came at the end of the creative period in Greek thought, and after his death it was two thousand years before the world produced any philosopher who could be regarded as approximately his equal."

In his work on substance and essence, he raised questions about the composition of the physical world and what the underlying nature of individual objects and ideas was. For Aristotle a "substance" is an individual that exists on its own and not as part of another item. A plant is a substance. An animal is a substance. Your mother is a substance.

An essence is what makes a substance. It is the defining characteristic or form of a substance. He claimed that the essence of a human is their soul.

Aristotle's concept of "hylomorphism" (i.e. matter + form) was used to theorize that every substance is a combination of both form (the essence of the substance) and matter. In this conception, matter is the "potential" of the substance while form is the "actuality" of this matter. Form gives matter its specific identity. On the other hand, Aristotle allowed for "accidents," the idea that properties can change without altering the substance's essence. A common example is that you could spray paint a white cat black, but its "cat essence" (the fact that it is a cat) would remain unchanged.

Aristotle was also a pioneer in ethical theory. In his work, "Nicomachean Ethics," he introduced the idea of virtue, emphasizing the importance of developing good character traits (virtues) as the basis of all ethical behavior. He argued that this would lead to the highest state for our lives, "eudaimonia," or "flourishing" (some translate the word as "happiness"). For Aristotle an ethical life is a happy life.

In political theory, Aristotle examined the characteristic organization and functioning of the polis, the city-state. He argued that the best form of government is one that "balances" democracy and oligarchy (oligarchy was a necessary component of the best governments he argued).

As we see directly, Aristotle also made extensive contributions to the natural sciences, primarily through his studies of biology and zoology. His classifications of the natural world were in common use for 2,000 years.

The great master also studied rhetoric, the art of persuasion. He made a case for three components of persuasion: ethos (credibility), pathos (emotional appeal), and logos (logical argument). His work laid the foundation for the study of rhetoric and communication for more than two millennia.

Aristotle also wrote on poetics, looking not only to develop principles of literary thought, but to also provide conceptual tools for the analysis of poetry and literature more generally. The modern term "meme" is in fact a derivative of Aristotle's concept of "mimesis" (imitation). He also introduced the term "catharsis" (emotional purification), both of which are influential or at least once were influential concepts in literary theory.

He also thought deeply about the practical acquisition of knowledge. How do we learn things? How do we assimilate what we know with what we are learning (i.e. the old with the

new)? Aristotle, like Peirce, believed that knowledge entered us through our sensory experiences. And in his work he contributed significantly to the foundation of the field of epistemology.

Aristotle is also known for his studies of natural phenomena, including concepts such as motion, causality, and the very nature of time and space. He was so successful and so convincing that his ideas dominated scientific thought, again, for twenty centuries.

This small sample of his contributions serves to highlight Aristotle's intellectual range of interests and his tremendous influence on many areas of human knowledge.

The Peloponnesian War was fought by Sparta and its allies, which included Macedonia, against Athens, from (roughly) 431-404 BCE. The Athenian Greek philosopher, Aristocles - known to us more commonly as Plato - was born when the war was already four years old. He was twenty-three years old when Sparta defeated Athens. Roughly seventeen years after the war ended, Plato established his Academy - a school dedicated to the developing the mind and the body - for learning, exercise, to develop the "whole man." He founded this school on inherited land, when he was about forty years old, in 387 BCE. Due to Plato's brilliance and his challenging Socratic method of instruction (as Plato presumably had been taught by Socrates himself), the Academy, named for the park where his teaching occurred, attracted a significant number of the sons of the wider Grecian elite, from within and without the city walls of Athens. For the next twenty largely unremarkable years he trained many of the best minds of his world.

However, when Plato was about sixty-one years of age, he received arguably the most influential and successful student any teacher has ever had come to him, a teenager sent by his wealthy guardians to study with the master of Athens. The seventeen year old boy dressed flashily, showing off his money and style, rings on most of his fingers and his hair worn very

stylishly (at least according to Diogenes). Some magic must have occurred between the master and this young dandy, however, for this dandy boy named Aristotle was to remain at Plato's side for the next twenty years, half of Plato's teaching career (and roughly a third of Aristotle's life), departing only with the master's death at about 80 years of age.

When Plato died, Aristotle applied to replace him as "scholarch," director of the Academy, but he did not get the job (which went to Plato's nephew, Speusippus).¹ Though the Peloponnesian war had been over for decades, Athenians had not forgotten that Aristotle was Macedonian and that Macedonia had been an ally of Sparta against Athens.

Ancient Athens was not easy for Aristotle, therefore. Even though he was born after the Peloponnesian War (431–404 BCE), the alliance of Macedonia and Sparta that defeated Athens brought his native land an ignominy well within the memories of many living Athenians. Athens was, likely as a partial consequence of the war, a xenophobic city, never fully welcoming to the young Macedonian, though it treated Aristotle tolerably at first because he was a student of Plato. Although later Aristotle was allowed to remain free in the city because of his connection with the Macedonian kings Philip and Alexander, the former's son, who had taken control of all Greece, he was for now, because of Plato's demise, forced to leave, as he would be forced yet again upon the death of Alexander and the end of his ties with royalty.

Aristotle's decision of where to relocate is intellectually fascinating. After the death of Plato, the nearly forty-years old philosopher moved to the island of Lesbos where he switched

¹ Speusippus was more interested in mathematics, where Aristotle was interested primarily in empirical work, reflecting, perhaps, the medical backgrounds of him and his father, who was a physician. Thus we might infer a focus in the Academy on mathematics.

his focus from metaphysics to empirical science. Aristotle undertook a zoological study of Lesbos, focusing on its marine biology, conducting most of his field research at the Pyrrha lagoon, on the west side of Lesbos. Through his field research, "Aristotle identified a variety of species including crustaceans, echinoderms, mollusks, and fish. He also recognized that cetaceans are mammals, and that marine vertebrates are either oviparous (producing eggs that hatch outside the body) or viviparous (producing eggs that hatch within the body). Because he is the first to record observations on marine life, Aristotle is often referred to as the father of marine biology."²

For nearly three years Aristotle carried out his pioneering biological research on Lesbos until receiving a summons in 343 BCE from King Philip II of Macedon to tutor Philip's adolescent son, Alexander (not yet "the great"). We are not sure how long Aristotle taught Alexander, but we do know that in 335 BCE, roughly when Alexander became king, setting out to conquer the world, Aristotle returned to Athens (now a friend of the king) and founded his own school, the Lyceum, a place that, like Plato's Academy, became known for academics and athletic training, reflecting the Greek view of the well-rounded man.

During the eleven years (334-323 BCE) that Aristotle operated his school (perhaps also including his period of scientific work around Lesbos), he wrote more than two-hundred works. Unfortunately, only thirty-one have survived. Each of his surviving documents is of significance to world thought. (Plato's Academy on the other hand operated for roughly three-hundred years,

² https://www.marinebio.org/creatures/marine-biology/history-of-marine-biology/#google_vignette

until destroyed in 86 BCE by Roman commander Sulla.) Like Peirce's own papers, many of Aristotle's works were lost after his death.

After the death of Alexander in 323 BCE, the Athenians required all foreign philosophers to depart. About one year later, following his second and final exit from Athens, Aristotle himself died at the age of 62, in Chalcis, Greece. Aristotle, like Peirce, passed into relative obscurity after his death (though highly respected by a core group of Greek philosophers), while Plato continued to be known as *the* philosopher for most of the Grecian and Roman worlds. As mentioned, approximately 84% of Aristotle's writings were eventually lost. Those of his writings that did survive were only discovered centuries later, poorly organized, requiring serious effort to edit and make sense of them. It wasn't until nearly 1,500 years after his death that his work was fully appreciated, studied, and recommended by Arabic and Jewish philosophers.

Thus the Macedonian Aristotle, like the American Aristotle, Charles Peirce, died in relative obscurity, with few who remembered him, his writings inaccessible to most. It was not until Thomas Aquinas (1225-1274) discovered the 400 ACE Latin translations of Aristotle's work that the Macedonian became a star in the Western world. Aquinas built Aristotle's philosophy into Catholic doctrines, constructing the latter around Aristotle's ideas, effectively bringing Aristotle into the church of Rome. Suddenly Aristotle was on the side of God, helping to ensure his lasting fame.

Reviewing Aristotle's accomplishments and importance begs the question "How does a thinker like Aristotle (or Peirce) come to be?" Is a genius of Aristotle's or Peirce's magnitude a genetic abnormality? Or does such brilliance simply require that a (very) smart person be born in the right time and place? Was Aristotle a product of his environment or a mutation who changed his environment and all subsequent history? Or is this simply another wrong-headed

question about the forced, false dichotomy of nature vs. nurture? I believe that the ultimate answer is *synergy* or, in Peirce's terms, *synechism* - the doctrine that all things are connected.

Although Aristotle's contributions were unique, no human accomplishment arises in a cultural vacuum. Greek civilization and culture were the environments that nurtured Plato, Aristotle, and many of the other greatest minds of human history. But what was it about Greek civilization that produced such fecund intellectual innovation?

Environment clearly played a role for both the American and the Macedonian Aristotles. In the case of Alexander's tutor, individual brilliance emerged from a brilliant culture. The culture of Greece emerged from the Cretan civilization that appeared around 3100 B.C.E., the oldest civilization of Europe.³ This earliest civilization of Crete is referred to as Minoan (3100-1450 B.C.E.), arising initially in the Bronze Age.⁴

Eventually, around 1450 B.C.E., however, after an invasion, the Minoan civilization was transmogrified through its fusion with mainland Greek culture into the portmanteau Mycenaean civilization, which lasted until about 1050 B.C.E. Perhaps the most significant of Mycenaean Greece's many accomplishments was its discovery of (syllabic) writing in about 1400 B.C.E., followed by alphabetic writing the eighth century B.C.E. Roughly one thousand years before Plato's student Aristotle (384-322 A.C.E.) began his contributions to world learning and thought, therefore, Greeks were already writing down their ideas. And they were not the only ones, as

³ Although this is the first civilization of Europe, it rose about 400 years after the Caral-Supe civilization of Peru. Civilization emerged in the Americas before Europe.

⁴ As we see below, Peirce's culture of Cambridge, Massachusetts was to play an equally formidable role in his own intellectual development.

Phoenician and other Semitic traders spread literacy (and their alphabet) throughout the ancient Mediterranean world.

Although it is known that Mycenaean is not only a Greek language, but the oldest form of Greek known, the Minoan base of the Mycenaean civilization is attested only in as yet undeciphered Cretan hieroglyphics and the syllabary of Linear A, not yet deciphered. We know that Minoan does not seem to be related to any Indo-European or Semitic language. And we also know that Minoan is not the auto-denomination of the people themselves, but is based on the mythological King Minos (of Theseus and the Minotaur fame). Minoan culture included social stratification, architecture, art, religion, and robust trade in the Mediterranean region. But much about this culture is either unknown or teasingly vague.

Mycenaean Greece, the successor to Minoan culture, formed towards the end of the Bronze Age (app. 1750-1050 B.C.E.). The Mycenaean innovated in architecture, the military, expanded trade, and via their syllabic (and now deciphered) Linear B script, provided the first records of the Greek language. Their religion included some of the deities that are familiar from the Olympic Pantheon that most of us grew up reading about. They seem to have been war-like and included many "substates," often built around palaces. This became a model for Greek city-states. Mycenaean ended mysteriously at the end of the Bronze Age itself, likely conquered by another people of the region. But its influence continued for centuries. The Mycenaean Age was the age of the mythological figures of Helen of Troy, Agamemnon, Hector, Ulysses, and "great Achilles." Mycenaean beliefs influenced subsequent Greek and Roman societies.

On the other hand, much of the mythical history of Mycenaean was written about two-hundred years later by Homer of Ionia, so we lack detailed contemporary records. But we nevertheless know that it was a rich period of Greek history and helped to set the stage for the

later civilization of the Attic-dialect speaking Greeks, including Plato and Aristotle in the fifth and fourth centuries B.C.E.

A summary of the history of Grecian philosophical influences on Peirce, from ancient Ionia to leading to Aristotle and beyond is coming later, but for now we need to know more about the content of Aristotle's work and why and how it became a model of sorts for Peirce's own work.

Aristotle's major polymathic works were his *Metaphysics* (following his work on physics, dealing in depth with the nature of substance and ontology), *Poetics*, *Nicomachean Ethics*, *Politics*, his *De Anima* (Aristotle's primary work on psychology), and his *Categories* (where there is perhaps the most overlap in interests, outside of logic, with Peirce). Like Peirce, Aristotle was an assiduous analyst of categories.

In his categorial studies, Aristotle divides philosophy into two parts: practical vs. theoretical. (Copleston 1993, p277ff):

- (i) Theoretical philosophy - knowledge as the end goal (not the means), including:
 - a. Physics/Natural Philosophy - material things subject to motion
 - b. Mathematics - entities unmoved but unseparated from matter
 - c. *Metaphysics* - separated (transcendant) from matter and unmoved (includes natural theology)

He then cordons off non-theoretical philosophy as worthy of attention, though less academically interesting:

- (ii) Practical philosophy, including:
 - Political science (strategy, economics etc.)

Aristotle's logic was a "formal logic," which to Aristotle (and Peirce) meant analysis of the *forms* of thought.

Aristotle classified "things that move" as the proper object of his theoretical philosophy, which he called "physics" (φύσις). Another branch of his theoretical studies was mathematics. Peirce's classification over 2,000 years later was heavily influenced by Aristotle's, but much more detailed (unsurprisingly given the growth of knowledge in twenty centuries). For Peirce math was foundation of all sciences and all knowledge, not merely one of a list of theoretical disciplines. In any case, for Aristotle, mathematics studied things that do *not* move. (A bit early for kinematics.)

Metaphysics, the study of what there is and why, also introduced by Aristotle, studies neither material objects nor moving things. It lays out an understanding of what we expect the universe to consist in, including abstract objects (e.g. being, time, substance, causality, identity, and knowledge). "What is time?" "What is matter?" "What is the divine?" "What does it mean to know anything?" These are vital questions for Aristotle and eminently theoretical. The primary difficulty with metaphysics, which has led many philosophers to view it with suspicion, is that there is often no way to test or verify claims about it.⁵ "How many angels can fit on the head of a pin?" is a metaphysical question about the nature of the divine's creations.

Aristotle continues his classification of the sciences by cordoning off areas of study he considered practical, in that they existed because of their applications rather than their theoretical interest. Chief among the practical philosophies in his scheme were politics, economics, and the

⁵ Thus when Peirce and friends founded the original "Metaphysical Club" (cf. Menand 2002 and below), they intended the name to carry some sarcasm.

study of strategy. For Aristotle the Macedonian, as for Peirce the Cantabrigian, logic was crucial to the sciences, a matter we will return to in depth.

Of pupil and teacher, Plato vs. Aristotle, Peirce considered the student the more interesting and more relevant philosopher, likely because Aristotle was more systematic, more consistently realist, more scientific, not depending on "heaven" or related notions for any part of his philosophy. In his logic Peirce referred to Aristotelian syllogisms as "perfect symbols." They were perfect symbols because they were complete arguments, meaning that their conclusions interpreted their premisses - they provided their own interpretant. Peirce initially used Aristotle's syllogisms to derive formal definitions of deduction, induction, and abduction - Peirce's triad of inference types. Propositions, which are constituents of syllogisms (discourse, conversations, and so on) are not themselves perfect symbols.⁶ This turns out to be important in Peirce's work on languages and its relevance to modern linguistics.

Aristotle's logic comes up frequently in Peirce's writings. In fact, the discovery of abduction (in early, pre-1905 Peirce, one of Peirce's most important discoveries) was, in the initial stages of Peirce's work, if not in his later work, derived in part by transforming the basic

⁶ "Peirce considered the argument to be the perfect symbol: "an argument, or proposition considered as leading to a definite conclusion, ought alone to be considered as a completely expressed symbol" (R 1147, 12; 1901); "the Argument perfects a symbol, or specially third category sign, by explicitly indicating an interpretant; namely, its conclusion" (R 690; 1901); "The highest kind of symbol is one which signifies a growth, or self-development, of thought, and it is of that alone that a moving representation is possible" (R 298, 13; c. 1906)." (Bellucci 2021, 177)

constituents of Aristotelian syllogistic reasoning (cf. Deutscher (2002) for more discussion of inference types in Peirce and how Peirce's ideas changed over time).

For example:

All men are mortal. (Major premise)

Socrates is a man. (Minor premise)

Socrates is mortal. (Conclusion)

This is in its entirety a symbol (composed of course of other symbols). What makes the syllogism (or a discourse) unique is that its interpretant is given in the three lines. The conclusion tells you how to interpret the whole. This syllogism takes us from the premise to the inescapable conclusion that Socrates is mortal.

Likewise, the rest of Aristotle's logic, e.g. induction and deduction, influenced Peirce greatly. Peirce writes positively of Aristotle's attempts at scientific method, constraining his explanations with what we know of the natural world, rather than "heaven" or "gods," as Plato and others before Aristotle commonly did. Aristotle's classifications of the different parts of the world and his architectonic arrangement of the sciences was significant for the development of Peirce's thought, including Peirce's own architectonic.⁷ Aristotle also wrote on semeiotics and the interpretations of signs (where a sign was broken into form vs. matter, as opposed to, say, form and content).

⁷ "Architectonic" means the "design" of science, relationship between parts and wholes of the different disciplines.

Among Aristotle's greatest influences on Peirce was the concept of "final cause." "In Peirce's view, our pursuit of scientific explanation leads us to conclude that final causality is indeed operative in the world." (Hawkins, 2007 p 521)

A case might be made that the roots of Aristotle's philosophy go back to the roots of our genus, Homo and before. Reading and defining signs, reasoning inferentially, and evaluating our inferences based on practice are some of the most important topics in Peircean and Aristotelian philosophies. And all hunter-gatherers's lives depend on their inferential and sign-reading abilities. The earliest hunter-gatherers of our genus were Homo erectus, roughly two million years ago (Everett (2017), inter alia). But so far as we know, (or will ever know) erectus developed no philosophy in the average understanding of that word. As enjoyable as it might be to contemplate the nature of Homo erectus philosophy, however, we are trying here to get at the roots of Peirce's thoughts and that most clearly originates with Homo sapiens, however likely that all of our special reasoning capacities (including language) originated with erectus (Everett (2017)).⁸

Aristotle thus contributed to many areas of the life of the mind, in ways that profoundly influenced all subsequent philosophers in the West, including Peirce. He was arguably the founder of formal logic via his syllogistic logic. With this logic he proved that some conclusions follow inevitably from certain premises, and thus structured a form of argumentation to help others provide their own proofs. The form of the syllogism is simple:

⁸ In Everett (in progress) and to a lesser degree below, a brief sketch of one non-Anglo-American philosophy is presented, in order to better situate Peirce's philosophy in the intellectual history of the hemisphere in which he lived and wrote.

Major premise: All men are mortal.

Minor premise: Socrates is a man.

Conclusion: (Therefore) Socrates is mortal.⁹

For more than two thousand years, Aristotelian syllogistic logic remained the standard logic. It was only in the nineteenth century that the discipline of formal logic (founded in part by Peirce himself) began to extend beyond Aristotle's work, taking new forms and directions (as we see later).

In metaphysics Aristotle pondered and pioneered, as we saw, thoughts about the essence of things and what it means for something to be potential or actual (related to Peirce's own concept of the distinction between the real and the existent). This served as the basis for many philosophical advances and can perhaps even be tied into the concept of "possible world semantics" that Peirce's modal logic helped construct.

His ethical contributions developed the idea of "virtue" and its role in happiness, the ethical life, and understanding of good living. He went so far as to argue that the final cause (ultimate goal) of humans should be happiness (eudaimonia). Peirce's life, and this is very important to my theses in what follows, illustrates a different final cause, one in disagreement with Aristotle's. One might call it "removal of doubt." Or epistemological satisfaction. Even epistemological duty (as Ray Monk puts it in the title of his biography of Ludwig Wittgenstein,

⁹ Christian philosophers might reject the major premise, denying that men are mortal because they live forever after "death" in heaven or hell, but no one can reject the form and effectiveness of the syllogism used as Aristotle intended.

The Duty of Genius). Of course, Peirce was also in the main a very happy man. So his life is not a falsification of Aristotelian eudaimonia per se. But it is a serious revision, addendum.

His political thinking pioneered and founded the field of political science. (Though fortunately Aristotle himself never used such a monstrous phrase.)

He was the first to develop sound principles of empirical research of the natural world, coupled with deep theoretical thinking. His work in botany, zoology, and oceanography were and still are (however factually accurate) models of how to do science. His scientific conclusions and classifications were influential for centuries.

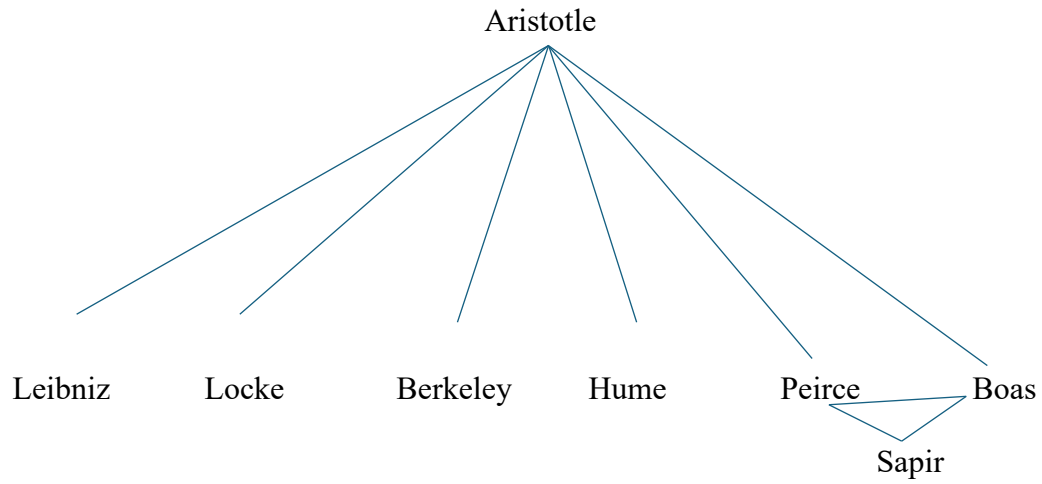
His work on rhetoric and poetics continue even now to be influential, twenty-four centuries after his death. He insightfully analyzed what it meant to persuade and convince people via what he analyzed as the triumvirate of ethos and believability, pathos and emotional appeal, and logos or logical argument. Many aspects of modern theories of communication trace their origins back to Aristotle. In his work on poetics, for example, beginning with his studies of Greek tragedy he originated literary theory and critical theory.

His epistemological work focused on the combination of empirical observation with logical reasoning, the former alone representing a revolution of western thought. His focus on experiential learning is at the heart of all forms of pragmatistic philosophy and in this sense is a strong connection with Peirce's own thought and work.

Like Peirce, Aristotle was a pioneering physicist. Unlike Peirce or any other, Aristotle was *the* pioneering physicist, the founder of the field. In his foundational work, Aristotle studied motion, causality, space and time. Again, here as in the other areas of his work, his ideas dominated Western intellectual life for centuries.

Also like Peirce, Aristotle's intellectual virtuosity ranged across a vast swath of knowledge and thought. But whereas Aristotle's relevance is slowly fading, Peirce's is just now, more than a century after his death, being appreciated by scholars as one of the greatest individual programs since thought began. An American Aristotle.

A partial summary of Aristotle's influence can be seen in the prominent philosophers and anthropologists he influenced, in this simplified diagram.



This brief introduction to Aristotle's life and work leads us naturally to our main project here - understanding the life and work of the American Aristotle.