Greek Science from Imperfect Religion

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Abstract. In this essay, I begin with an introduction of the Pre-Socratic philosophers who birthed Western philosophy. I then discuss some of the major contributions of early Greek and Hellenistic thinkers until the decline of Alexandria. I conclude with my account of how and why Greek religion allowed for such scientific achievements. I argue that religious tolerance combined with a conception of imperfect gods set the conditions for an unhindered evolution of ideas. In my view, Greek religion shared a common trait with the Greek method of philosophical argumentation; in much the same way that Greek philosophers developed their thoughts about physics, ethics, and logic by working through what made sense to them and discarding what did not, Greek religion allowed for a give-and-take attitude about the nature and existence of the gods. It was the pluralistic imperfection of Greek religion the encouraged the healthy skepticism that led to an outpouring of new ideas.

I. Introduction.

According to Greek Historians, Greek people fled to Ionia in response to a Dorian invasion around 1100 BCE. Those who founded the city of Miletus came from Attica, the area surrounding Athens.1 Ionia, and especially Miletus, became a melting pot of cultures and ideas that birthed the beginning of Western philosophy. Greek natural philosophers were heavily influenced by Egyptian and Babylonian science, math, and astronomy. A common theme among the scientists, mathematicians, doctors, and engineers in the Greek world is that they built on the work of those who came before

1 Peter Adamson, Classical Philosophy: a history of philosophy without any gaps (Oxford: Oxford University Press, 2014), 3. According to Adamson (3), the Ionian dialect supports the claim that the Milesians came from Attica. Of note, Athens became the center of Greek philosophy, at least according to surviving philosophical works.
them and were willing to engage with or incorporate foreign ideas. In the Hellenistic age, they constructed the great Library of Alexandria, whose lecture and meeting halls saw the development of both practical and theoretical knowledge in several disciplines for hundreds of years.

In this essay, I begin with an introduction of the Pre-Socratic philosophers who birthed Western philosophy. I then discuss some of the major contributions of early Greek and Hellenistic thinkers until the decline of Alexandria. I conclude with my account of how and why Greek religion allowed for such scientific achievements. I argue that religious tolerance combined with a conception of imperfect gods set the conditions for an unhindered evolution of ideas. In my view, Greek religion shared a common trait with the Greek method of philosophical argumentation; in much the same way that Greek philosophers developed their thoughts about physics, ethics, and logic by working through what made sense to them and discarding what did not, Greek religion allowed for a give-and-take attitude about the nature and existence of the gods. It was the pluralistic imperfection of Greek religion the encouraged the healthy skepticism that led to an outpouring of new ideas.

II. The Beginning of Greek Science

In 585 BCE, Thales of Miletus (ca. 624-546 BCE) successfully predicted a solar eclipse, marking what Thomas Blackson calls a “new way of thinking.” This

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achievement of natural philosophy began an intellectual revolution which traded questions of why or who for questions of what and how.\(^5\) Prior to the Milesian “inquiry into nature,”\(^6\) which is commonly considered the beginning of Western philosophy,\(^7\) people sought answers from storytelling and poetry.\(^8\) Homer’s \textit{Iliad} and \textit{Odyssey}, the earliest examples of Greek literature, had become works of religious significance by the 5\(^{th}\) century BCE. The epic poems contained tales of magic and the Gods, which influenced Greek thought about how the world works. Prior to the Milesian revolution, Hesiod’s \textit{Theogony}, which implied that the human mind cannot grasp the origin of the physical world,\(^9\) represented the commonly held perspective. For Hesiod, to produce such a work required divine inspiration. Furthermore, ‘being’ was simply incomprehensible. Thales disagreed on both accounts and sought to develop a theory for the origin of everything.\(^10\) As Aristotle later pointed out, Thales seemed to be an empirical thinker who looked for answers in the physical world.\(^11\)

\(^6\) Blackson, \textit{Ancient Greek Philosophy}, 13.
\(^7\) Curd suggests that Thales and the Milesians would “almost certainty” not consider themselves philosophers in the modern sense of the word; instead, they were “inquirers into many things, and the range of their inquiry was vast,” including many areas that fall into various scientific disciplines today. Curd also points out that calling these philosophers “presocratics” is problematic because some were actually contemporaries with Socrates. The term signifies a transition in thought, not a specific time period. Patricia Curd, “Presocratic Philosophy,” Edward N. Zalta (ed.), \textit{The Stanford Encyclopedia of Philosophy} (Summer Edition, 2019). \url{https://plato.stanford.edu/entries/presocratics/}.
\(^8\) David Roochnik, \textit{An Introduction to Greek Philosophy} (Audiobook: The Great Courses, 2002).
\(^9\) Roochnik, \textit{Introduction to Greek Philosophy}.
\(^10\) Roochnik, \textit{Introduction to Greek Philosophy}.
\(^11\) Roochnik, \textit{Introduction to Greek Philosophy}.
Thales posited that there is an origin to our world and that it is observable.\footnote{Markos, “The PreSocratics—Physics and Metaphysics.”}

Prior to the Pre-Socratics, Greeks thought of the world as theocentric and anthropomorphic: “The world was what it was and did what it did because of the will of the gods, who differed from humans only with respect to their power.”\footnote{Dion Scott-Kakures et al., *History of Philosophy* (New York: HarperCollins Publishers, Inc., 1993), 1.} The Milesians, on the other hand, developed explanations as natural processes rather than the desires of gods.\footnote{Scott-Kakures et al., *History of Philosophy*, 2.} According to Peter Adamson, the main difference between the Pre-Socratics’ work and the writings of Homer or the theologians is that the Pre-Socratics’ thoughts are, “at least implicitly, grounded in arguments.”\footnote{Adamson, *Classical Philosophy*, 6 (emphasis Adamson’s).} Hesiod had claimed that everything comes from chaos and earth, but he presented no argument for his view. Instead, he told a story to “convince with its power and instill awe as well as belief.”\footnote{Adamson, *Classical Philosophy*, 18.} The Pre-Socratics, on the other hand, traded the usual written verse for a new literary form they called “inquires.”\footnote{Blackson, *Ancient Greek Philosophy*, 14.} They thought humans could flourish by thinking clearly and systematically about nature instead of relying on received wisdom.\footnote{Blackson, *Ancient Greek Philosophy*, 14.} As Carl Sagan puts it, this “productive and new” mode of explanation was based on laws—not gods, and within “a few hundred years history passed from god-driven to human-driven.”\footnote{Carl Sagan, *The Demon Haunted-World: Science as a Candle in the Dark* (London: HEADLINE BOOK PUBLISHING, 1997), 299.} In other words, the Pre-Socratics looked for a universal way to understand the world rather than explanations rooted in the whims of local
They also preferred reason over experience because experience could be misleading. According to James Jordon,

Thales implicitly denied the relevance (if not also the existence) of supernatural agencies. Events in nature could be accounted for without attributing them to powers from outside. Instead of describing the parentage and exploits of a water-god, or fitting gods into a family tree that grew out of water, Thales adopted a perspective on nature that seems almost modern by comparison. Naive as his view was, it had the great merit of being open to tests of logic and evidence—tests whose laborious development was stimulated by the critical discussion his view invited.

III. The Evolution of Ideas.

One of the most significant features of early Greek science is the tendency for the natural philosophers to build on previous work toward both practical and theoretical knowledge. Miletus was part of Ionia, a series of islands plus a strip of coastline on the Western shore of modern-day Turkey that contained a series of prosperous and cosmopolitan cities along important trade routes. The Milesian philosophers, namely Thales, Anaximander, and Anaximenes, focused on cosmology and borrowed heavily from Egyptian and Mesopotamian ideas about the underlying substance of reality. Thales “pored over a number of existing materials” and developed his own concepts through observations, which made him a pioneer. He had spent time in Egypt and transformed practical ideas he learned during his travels.

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into abstract first principles and theorems.\textsuperscript{26} For Thales, the cause (\emph{arkhe}) of all things had to be material.\textsuperscript{27} He offered water as the source of the universe because he thought change stems from a kind of life inherent in water. Aristotle suggested that Thales had this idea due to physiological reasons, i.e. dampness in living things.\textsuperscript{28} Thales essentially proposed a hypothesis about the nature of matter that could be observed and tested. Though he accepted that the cosmos may be set in motion by the gods, he thought physical phenomena were due to rational processes and the cause of those processes happened to be water.

Anaximander (ca. 610-545 BCE) rejected Thales' solution on the basis that the opposition of the elements (earth, air, fire, and water) made it impossible for one of them to be fundamental; instead, Anaximander suggested that the origin of all things was the unobservable \emph{apeiron}, which was an indefinite fifth element that composed the others.\textsuperscript{29} In other words, Anaximander’s principle had no specific nature,\textsuperscript{30} a conclusion he determined using rational argumentation. As Adamson puts it, “His infinite is a conceptual leap, and seems to be derived from pure argument rather than empirical observation.”\textsuperscript{31} Later, Anaximenes (ca. 580-500 BCE) argued against Anaximander’s proposal because he recognized the \emph{apeiron} as both not necessary and not observable. For Anaximenes, we should deny that the four elements are opposed

\begin{footnotesize}
\textsuperscript{26} Markos, “The PreSocratics—Physics and Metaphysics.”
\textsuperscript{27} Roochnik, \textit{Introduction to Greek Philosophy}.
\textsuperscript{28} Jordan, \textit{Western Philosophy from Antiquity}, 5.
\textsuperscript{29} Scott-Kakures et al., \textit{History of Philosophy}, 2. According to Adamson (\textit{Classical Philosophy}, 10), \emph{apeiron} means “that which has no limit.”
\textsuperscript{30} Adamson, \textit{Classical Philosophy}, 11.
\textsuperscript{31} Adamson, \textit{Classical Philosophy}, 13.
\end{footnotesize}
and develop a theory for how orderly transformations take place.\textsuperscript{32} He agreed with Anaximander’s infinite principle, but he offered air as the fundamental substance because he thought air could be changed to produce other things. He also recognized the soul (\textit{pneuma}), which seemed to be identified with breath, as a kind of air.\textsuperscript{33} Adamson points out that Anaximenes’ suggestion makes sense from an observational perspective, considering that animals must breathe to stay alive.\textsuperscript{34} Anaximenes also took rational argumentation a step further by rejecting Hesiod’s assertion that the rain fell because Zeus felt stormy; instead, Anaximenes offered his own argument that rain falls due to condensed air.\textsuperscript{35}

Pythagoras (ca. 570-495 BCE) thought there was an orderly and rational mathematical structure underlying reality and that it could help us understand how the world actually works.\textsuperscript{36} Heraclitus (ca 540-480 BCE) also shared a conception of a rational order in nature. For Heraclitus, the world was ordered according to the \textit{logos}, which he saw as a type of deity that he identified with fire.\textsuperscript{37} Heraclitus thought everything is constantly changing but also really one.\textsuperscript{38} He offered the famous argument that we cannot step in the same river twice because the world is in constant flux; however, the river remains the same river in name and path, only with

\textsuperscript{32} Scott-Kakures et al., \textit{History of Philosophy}, 3.
\textsuperscript{33} Adamson, \textit{Classical Philosophy}, 13.
\textsuperscript{34} Adamson, \textit{Classical Philosophy}, 14.
\textsuperscript{35} Blackson, \textit{Ancient Greek Philosophy}, 16-17.
\textsuperscript{36} Scott-Kakures et al., \textit{History of Philosophy}, 4.
\textsuperscript{37} Jordan, \textit{Western Philosophy from Antiquity}, 17.
\textsuperscript{38} Scott-Kakures et al., \textit{History of Philosophy}, 6.
different bits of water at any given time.\textsuperscript{39} Heraclitus thought of the entire universe as similar to a great river. Its course is set by the \textit{logos}, yet its substance is ever changing. Heraclitus identified the soul with fire, an idea which could have stemmed from observation since living bodies produce heat and go cold upon death.\textsuperscript{40} He saw the gods as self-contained, but he believed humans could understand the cosmos due to the rational nature of the \textit{logos}. Heraclitus looked for common patterns or structures exhibited within the universe rather than for an underlying substance, paving the way for the beginnings of an idea of natural law. As Jordan puts it, “It is remarkable that Heraclitus anticipated this development as much as he did.”\textsuperscript{41} For Heraclitus, “men who love \textit{wisdom} must be inquirers into many things.”\textsuperscript{42}

Parmenides (ca. 515-430 BCE) centered his inquiry around whether our senses can be trusted. He truly emphasized argumentation because he wanted people to understand why he held his views.\textsuperscript{43} Parmenides began with a simple principle and explored the logical consequences to determine that the world is not as it seems.\textsuperscript{44} He decided that we should not trust our senses but, rather, should follow the path of truth.\textsuperscript{45} His followers, namely Zeno of Elea (ca. 495-430 BCE), used Parmenides’ teaching to demonstrate that motion is impossible. Pluralists, such as Empedocles (ca. 494-434) and Anaxagoras (ca. 510-428 BCE) liked the argument but could not accept

\begin{itemize}
\item \textsuperscript{39} Adamson, \textit{Classical Philosophy}, 33.
\item \textsuperscript{40} Adamson, \textit{Classical Philosophy}, 35.
\item \textsuperscript{41} Jordan, \textit{Western Philosophy from Antiquity}, 18.
\item \textsuperscript{42} Blackson, \textit{Ancient Greek Philosophy}, 55 (emphasis Blackson’s).
\item \textsuperscript{43} Scott-Kakures et al., \textit{History of Philosophy}, 7.
\item \textsuperscript{44} Adamson, \textit{Classical Philosophy}, 42.
\item \textsuperscript{45} Adamson, \textit{Classical Philosophy}, 40.
\end{itemize}
the conclusion, so they made revisions to better understand the root of the problem. Empedocles said there is no creation or destruction, only mixture. Anaxagoras argued that there is an indefinite amount of elemental “stuffs,” which are divisible; change is a result of mixing and separating these “stuffs.” Atomists took this idea even further by theorizing that particles of different sizes and shapes are indivisible and combine to form the illusion of our experience.

Democritus (ca. 460-360 BCE), the most famous of the atomists, continued the work of Leuccippus (fl. 5th century BCE), who was the founder of Greek atomism. Democritus wrote no fewer than 52 works in multiple fields and claimed to have learned from men in many places. In direct response to Parmenides, he postulated that all that exists are atoms and the void; everything is a matter of atomic collisions, which are random and mechanical. For Democritus, there is no grand purpose. He even drew skeptical conclusions about his own theories. Democritus postulated, based on the principle of sufficient reason, that there must exist atoms of all shapes and sizes and possibly an infinite number of worlds. He used reason to deduce how the world must be, and, in the tradition of Parmenides, his early science tells us that the world is often not as it seems to us.

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48 Jordan, *Western Philosophy from Antiquity*, 42.
49 Jordan, *Western Philosophy from Antiquity*, 41.
51 Adamson, *Classical Philosophy*, 52-54.
52 Adamson, *Classical Philosophy*, 54-55.
During Democritus’ life, the political environment, popularity of the Sophists, and the rise of Socrates (ca 470-399 BCE) largely shifted the focus from natural science to ethics. During the period of schools, many people concentrated on how to live a good life instead of how to understand the world. Eventually, Aristotle (384-322 BCE) combined the moral and physical lines of Greek thought, reinvigorated scientific development, and accumulated “a magnificent body of organized science.”53 In 300 BCE, Ptolemy I chose Alexandria, Egypt to build a library and “museum,” where scholars and scientists would enjoy free lodging and conduct collaborative research and investigation.54 The Ptolemies built two libraries at Alexandria that housed around 700,000 volumes and employed “innovators of rigorous scholarship.”55 The Library of Alexandria was modeled on schools such as the Academy and the Lyceum, except it was devoted to research and scholarship and funded directly by the Ptolemies.56 According to G.E.R. Lloyd, Epicurean and Stoic philosophers had continued developing ideas in physics after Aristotle, but they did so for peace of mind; “neither engaged in empirical research.”57 The Hellenistic scientists at Alexandria, however, did conduct research and “achieved notable successes in turning the enquiry into an exact science.”58

Over several hundred years, scientists at Alexandria excelled in several areas of natural science, mathematics, and medicine. Herophilus (ca. 335-280 BCE), “the

founder of scientific anatomy,”^59 was among the first to employ the scientific method during his studies. He and Erasistratus (ca. 304-250 BCE) dissected actual human bodies, leading to huge leaps in anatomy and medicine.^60 Herophilus established that veins carry blood, that the pulse is linked to blood flow and can be used for diagnosis, and that intelligence resides in the brain as opposed to the heart. Erasistratus determined that the heart is a pump. Jointly, they discovered the nervous system.^61 Herophilus also wrote about medicine specifically for women, and other scientists wrote extensively about pharmacology.^62 Archimedes (ca. 287-212) and Apollonius (ca. 15-100) were “creative mathematical geniuses,”^63 and Euclid (fl. 300 BCE) produced work that would become the textbook for geometry for the next 2,000 years.^64 Ptolemy (ca. 100-170), drawing on earlier work by Hipparchus (ca. 190-120 BCE), applied geometry to explain planetary motion, which Lloyd calls “one of the most outstanding achievements of ancient science.”^65 Hipparchus had also charted the positions of over 850 stars and determined the Moon’s distance from Earth.^66 Eratosthenes (ca. 275-192 BCE) calculated the circumference of the Earth with 98% accuracy, only erring by 170 miles.^67 Furthermore, Aristarchus (ca. 310-230 BCE) first proposed the heliocentric model of the solar system and placed the known planets in

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^60 Adamson, *Hellenistic & Roman Worlds*, 130.


^64 Jordan, *Western Philosophy from Antiquity*, 174. Euclid borrowed heavily from Egyptian geometry.


their correct orbits. Engineers at Alexandria also developed technological devices, such as Ctesibius’ (fl. 285-222 BCE) pumps and valves for water pressure,68 and Hero’s (ca. 10-70) systems of pullies, levers, wheels, and wedges to shift weights.69 We even find chemistry taking shape in the “proto-chemical literature” of the late Hellenistic period.70

Scholars at Alexandria produced more than just science and math, as the library was a melting pot of ideas from various religions and cultures. Philinus (fl. 240 BCE) founded empiricism, which was the idea that the only source we need for medical knowledge is experience,71 and religious scholars translated the Old Testament into Greek for the Jewish community of Alexandria. The resulting Septuagint helped revive the Jewish faith and became a holy text for Christians.72 Ironically, a Christian mob brutally murdered one of the last great thinkers in Alexandria, one who represented the multi-disciplinary, multicultural, and inclusive aspect of the Library. Hypatia (ca. 380-415), a female, was a Neoplatonist scholar of philosophy, mathematics, and astronomy who taught both pagans and Christians alike. She was accused of witchcraft and subsequently dragged through the streets, mutilated, and burned by angry Christians.73 After a series of disasters, including an accidental fire caused by Julius Caesar, coupled with the political and governmental collapse of the Roman

71 Adamson, Hellenistic & Roman Worlds, 132.
72 Jordan, Western Philosophy from Antiquity, 174.
73 Adamson, Hellenistic & Roman Worlds, 260.
Empire, the Library of Alexandria declined in importance during the third century AD and eventually disappeared.\(^{74}\)

**IV. A Religious Environment Conducive to Science.**

Several authors have offered possible reasons for the development of scientific thought in ancient Greece and during the Hellenistic era. The mixing of ideas from diverse backgrounds almost certainly contributed, as the Milesian revolution took place in an area of trade and colonization where Babylonian, Egyptian, Persian, and Greek cultures intersected.\(^{75}\) Alan Cromer argues that the Greek development of “objective thinking” was due to several additional cultural factors, including appreciation for rational debate, a maritime economy with access to the outside world and a merchant class able to hire teachers, Homer’s poems (which Cromer calls the “epitome of liberal rational thinking”), a “literary religion not dominated by priests,” and all of these factors occurring for 1000 years.\(^{76}\) According to Lloyd, the key influences on Greek science development were the mixing of Greek and non-Greek ideas from the 4\(^{th}\) century BCE onward in conjunction with increasing scientific specialization, centers of research and institutions like the Library of Alexandria, and kingly patronage to pay for the endeavor.\(^{77}\) Carl Sagan suggests that creating systematic inquiry is what launched the Ionians toward their path of advancement.\(^{78}\) I agree with Cromer, Lloyd, and Sagan; each of these factors likely played a role in

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\(^{74}\) Jordan, *Western Philosophy from Antiquity*, 175.


\(^{77}\) Lloyd, “Hellenistic Science,” 321.

developing Greek science, but the socially accepted willingness to question religious beliefs was also crucial.

As Sagan suggests, “a proclivity for science is embedded deeply within us.”

Advancement, however, is unlikely without an environment conducive to exploring new and possibly controversial ideas. In other words, if the religious establishment quashes free thought and claims total epistemic authority, then the acquisition of new knowledge is extremely limited. In my view, ancient Greek and Hellenistic thinkers were able to achieve so much because their religious tradition did not demand a single interpretation of the world or claim absolute truth. In Greece many religions thrived, as “every conceivable religious system was advocated.” There were many gods, but skepticism and even atheism were also accepted. Personal beliefs were not regulated, even though public displays of worship were expected as a type of social responsibility. One could express a myriad of beliefs as long as she practiced the appropriate social displays. The Greeks even borrowed myths from Canaanites and other groups to expand upon and update their gods. Greek religion was flexible enough to allow for Alexander the Great to declare himself the son of both the Greek god Zeus and the Egyptian god Ammon. Alexander became the son of the conflated god, Zeus-Ammon, who was said to have recognized Alexander as his progeny and to have promised him the conquest of Asia.


The early Greek philosophers did not discard religion, but they challenged normally accepted conceptions of the divine.\textsuperscript{82} The Homeric gods acted like humans, and some philosophers, such as Heraclitus, ridiculed such popular religious ideas.\textsuperscript{83} Xenophanes was the first to explicitly “attack the authority of the poets” and to explain the gods as simply a projection of human nature.\textsuperscript{84} According to Xenophanes, a true god would not be anything like a human. He declared that cattle or horses would certainly depict their own gods as cattle and horse gods, so we should take our human gods as a sign that we are wrong.\textsuperscript{85} For Xenophanes, attributing the rainbow, which he thought was simply a colored cloud, to Iris is ridiculous, and the sun should be understood as the fire that it actually is.\textsuperscript{86} Pythagoras, on the other hand, thought the rational mathematical order of the cosmos proved that a god exists. Anaximander saw humans arising from previous animal life, and Democritus’ mechanistic universe allowed for human development without the need for any gods. Each of these ideas could flourish in Greece because, as Lloyd explains, “Ancient astronomers had ... no Church to contend with, and no Bible with the authority of revealed truth.”\textsuperscript{87} Eventually, traditional religions simply could not compete with fanatic belief in direct access to such revealed, absolute truth.\textsuperscript{88}

\textsuperscript{82} Adamson, \textit{Classical Philosophy}, 15.
\textsuperscript{83} Jordan, \textit{Western Philosophy from Antiquity}, 19.
\textsuperscript{84} Adamson, \textit{Classical Philosophy}, 19.
\textsuperscript{85} Adamson, \textit{Classical Philosophy}, 20.
\textsuperscript{86} Adamson, \textit{Classical Philosophy}, 21.
\textsuperscript{87} Lloyd, “Hellenistic Science,” 340.
\textsuperscript{88} Adamson, \textit{Hellenistic & Roman Worlds}, 150.
What was it about Greek religion that allowed early science to flourish? I argue that the answer is a healthy skepticism derived from religious tolerance combined with a general view of the gods as fallible. When the Ionians were the first to posit natural laws rather than gods, Greek society accepted it. Visitors from foreign lands brought with them a slew of human-like gods and new practices such as astrology, and the Greeks accepted them. Philosophers proposed abstract gods based in reason or mathematics and, still, the Greeks could accept it. Other Philosophers suggested that the gods do not even exist, yet the Greeks were receptive. Whether people thought of the gods as involved in human affairs or completely indifferent to us, the Greeks took it all in stride. This way of looking at the world encouraged a type of humility and inspired the pursuit of knowledge. Religion served as part of the social order, but it was not in control. In other words, the Greeks realized that they did not possess all of the answers, even when it came to the divine. They knew that they could be wrong about the gods as well as the world around them. They were able to take what made sense and discard what did not, even if new ideas fundamentally disagreed with tradition. As Sagan puts it,

Something akin to laws of Nature were once glimpsed in a determinedly polytheistic society, in which some scholars toyed with a form of atheism. This approach of the pre-Socratics was, beginning in about the fourth century BC, quenched by Plato, Aristotle and then Christian theologians. If the skein of historical causality had been different — if the brilliant guesses of the atomists on the nature of matter, the plurality of worlds, the vastness of space and time had been treasured and built upon, if the innovative technology of Archimedes had been taught and emulated, if the notion of invariable laws of Nature that humans must seek out and understand had been widely propagated — I wonder what kind of world we would live in now.90

For Sagan, the idea of religious perfection seems to be a major factor in the dismantling of scientific progress. I tend to agree. I think Greek culture produced what it did because there was no concept of revealed truth from a perfect being. The Greeks explained the natural world and the spiritual realm in terms that were always up for debate. It was the later systematic execution of strict religious dogma that stymied their amazing progress.

**V. Conclusion.**

The Greek historian Herodotus (ca. 484-425), commonly called the father of history, interpreted the cause of the Persian wars in terms of clashes of culture as opposed to the will of the gods. According to Herodotus, history was not a matter of the gods doing things to us, but rather about us to doing things to each other. This was a significantly new way of thinking because fatalism was the traditional belief. For the Greeks, the gods decided each person’s fate, and fate was unalterable. Herodotus depicted a world in which such was not necessarily the case—humans had the power of choice.

The Greek gods seemed to represent human emotions or natural occurrences. This realization may have influenced the Pre-Socratics to question their beliefs. They were most certainly willing to challenge the conventional wisdom and to seek knowledge from foreign peoples. They were also willing to build upon the ideas of those before them and to challenge those with whom they disagreed. The Greeks seemed to treat religion and science in a similar manner; both were up for debate.
They approached the realm of the gods in the same fashion as they approached other arguments. They could do so because their religion was flexible.

Around 391, all pagan universities, academies, and libraries were closed after an edict from the Roman emperor, Theodosius. The Christian Roman empire deemed these establishments to be Satanic. There was only one god, and any skepticism about the true religion was no longer allowed. The Greek gods had been able to evolve alongside local interpretations of them. Religion was a matter of social interaction and an attempt at explanations. Christianity introduced a system incompatible with alternate views. There was now one perfect god, one set of rules, and one path to salvation. No longer could the imperfection inherent in Greek religion drive thinkers toward public skeptical debate.

As I discussed, Greek science developed from a number of beneficial contributing factors. The Greeks borrowed heavily from their peers and foreign thinkers alike. They were able to openly ponder the deeper realities of their world and even criticize belief in the gods because the religious environment allowed for differences in personal, local, and regional religious practices. The critical change occurred when skepticism was no longer an option. Scientific advancement in the new Christian world crept to a halt because the answers were now controlled by an authoritative religious establishment. It would be several centuries before the Western world picked up where the Greeks left off.
Bibliography


