

Influence of Science on Ancient Greek Sculptures

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ABSTRACT

The Greeks made major contributions to math and science. We owe our basic ideas about geometry and the concept of mathematical proofs to ancient Greek mathematicians such as Pythagoras, Euclid, and Archimedes. Some of the first astronomical models were developed by Ancient Greeks trying to describe planetary movement, the Earth's axis, and the heliocentric system a model that places the Sun at the center of the solar system. The sculpture of ancient Greece is the main surviving type of fine ancient Greek art as, with the exception of painted ancient Greek pottery, almost no ancient Greek painting survives. The research further shows the influence science has in the ancient Greek sculptures.

Keywords: Greek, Sculpture, Astronomers, Pottery.

INTRODUCTION

The sculpture of ancient Greece is the main surviving type of fine ancient Greek art as, with the exception of painted ancient Greek pottery, almost no ancient Greek painting survives. Modern scholarship identifies three major stages in monumental sculpture in bronze and stone: the Archaic (from about 650 to 480 BC), Classical (480-323) and Hellenistic [1]. At all periods there were great numbers of Greek terracotta figurines and small sculptures in metal and other materials. The Greeks decided very early on that the human form was the most important subject for artistic endeavor. Seeing their gods as having human form, there was little distinction between the sacred and the secular in art the human body was both secular and sacred. A male nude of Apollo or Heracles had only slight differences in treatment to one of that year's Olympic boxing champion. The statue, originally single but by the Hellenistic period often in groups was the dominant form, though reliefs, often so "high" that they were almost free-standing, were also important [2]. Building on the discoveries and knowledge of civilizations in Egypt and Mesopotamia, among others, the Ancient Greeks developed a sophisticated philosophical and scientific culture. One

of the key points of Ancient Greek philosophy was the role of reason and inquiry. It emphasized logic and championed the idea of impartial, rational observation of the natural world.

The Greeks made major contributions to math and science. We owe our basic ideas about geometry and the concept of mathematical proofs to ancient Greek mathematicians such as Pythagoras, Euclid, and Archimedes. Some of the first astronomical models were developed by Ancient Greeks trying to describe planetary movement, the Earth's axis, and the heliocentric system a model that places the Sun at the center of the solar system [3]. Hippocrates, another ancient Greek, is the most famous physician in antiquity. He established a medical school, wrote many medical treatises, and is because of his systematic and empirical investigation of diseases and remedies credited with being the founder of modern medicine. The Hippocratic oath, a medical standard for doctors, is named after him. Greek philosophical culture is exemplified in the dialogues of Plato, who turned the questioning style of Socrates into written form [4]. Aristotle, Plato's student, wrote about topics as varied as biology and drama.

Painting of Sculpture

Ancient Greek sculptures were originally painted bright colors, they only appear white today because the original pigments have deteriorated [5]. References to painted sculptures are found throughout classical literature, including in Euripides's *Helen* in which the eponymous character laments, "If only I could shed my beauty and assume an uglier aspect/The way you would wipe color off a statue." Some well-preserved statues still bear traces of their original coloration and archaeologists can reconstruct what they would have originally looked like [6]. By the early 19th century, the systematic excavation of ancient Greek sites had brought forth a plethora of sculptures with traces of notably multicolored surfaces, some of which were still visible. Despite this, influential art historians such as Johann Joachim Winckelmann so strongly opposed the idea of painted Greek sculpture that proponents of painted statues were dismissed as eccentrics, and their views were largely dismissed for more than a century. It was not until published findings by German archaeologist Vinzenz Brinkmann in the late 20th and early 21st century that the painting of ancient Greek sculptures became an established fact. Using high-intensity lamps, ultraviolet light, specially designed cameras, plaster casts, and certain powdered minerals, Brinkmann proved that the entire Parthenon, including the actual structure as well as the statues, had been painted [7]. He analyzed the pigments of the original paint to discover their composition. Brinkmann made several painted replicas of Greek statues that went on tour around the world. Also in the collection were replicas of other works of Greek and Roman sculpture, and he demonstrated that the practice of painting sculpture was the norm rather than the exception in Greek and Roman art. Museums that hosted the exhibit included the Glyptothek Museum in Munich, the Vatican Museum, and the National Archaeological Museum in Athens [8]. The collection made its American debut at

Harvard University in the fall of 2007 [9]. Brinkmann said that "no other aspect of the art of antiquity is as little understood as is the polychrome painting of temples and sculptures", and that modern sculptures, ostensibly inspired by the Greeks but left unpainted, are "something entirely new"

Art, literature, and theatre

Literature and theatre, which were very intertwined, were important in ancient Greek society. Greek theatre began in the sixth century BCE in Athens with the performance of tragedy plays at religious festivals. These, in turn, inspired the genre of Greek comedy plays [10].

These two types of Greek drama became hugely popular, and performances spread around the Mediterranean and influenced Hellenistic and Roman theatre. The works of playwrights like Sophocles and Aristophanes formed the foundation upon which all modern theatre is based. In fact, while it may seem like dialogue was always a part of literature, it was rare before a playwright named Aeschylus introduced the idea of characters interacting with dialogue [9]. Other theatrical devices, like irony, were exemplified in works like Sophocles' *Oedipus the King*. In addition to written forms of theater and literature, oral traditions were important, especially in early Greek history. It wasn't until around 670 BCE that Homer's epic poems, *The Iliad* and *Odyssey*, were compiled into text form.

Greek art, particularly sculpture and architecture, was also incredibly influential on other societies. Greek sculpture from 800 to 300 BCE took inspiration from Egyptian and Near Eastern monumental art and, over centuries, evolved into a uniquely Greek vision of the art form [10]. Greek artists reached a peak of excellence which captured the human form in a way never before seen and much copied. Greek sculptors were particularly concerned with proportion, poise, and the idealized perfection of the human body; their figures in stone and bronze have become some of the most recognizable pieces of art ever produced by any civilization [11].

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Greek architects provided some of the finest and most distinctive buildings in the entire Ancient World and some of their structures including temples, theatres, and stadia would become staple features of towns and cities from antiquity onwards.

In addition, the Greek concern with simplicity, proportion, perspective, and harmony in their buildings would go on to greatly influence architects in the Roman world and provide the foundation for the classical architectural orders which would dominate the western world from the Renaissance to the present day [12].

The legacy of Greek culture

The civilization of ancient Greece was immensely influential in many spheres: language, politics, educational systems, philosophy, science, and the arts [13]. It had major effects on the Roman Empire which ultimately ruled it. As Horace put it, "Captive Greece took captive her fierce conqueror and instilled her arts in rustic Latium." [14]

Via the Roman Empire, Greek culture came to be foundational to Western culture in general. The Byzantine Empire

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inherited Classical Greek culture directly, without Latin intermediation, and the preservation of classical Greek learning in medieval Byzantine tradition exerted strong influence on the Slavs and later on the Islamic Golden Age and the Western European Renaissance [15]. A modern revival of Classical Greek learning took place in the Neoclassicism movement in eighteenth- and nineteenth-century Europe and the Americas.

Ancient Greek Sculptures of Mourning Women revealed by Science

Scientific analysis of four rare sculptures of mourning women furthers understanding of South Italian funerary art.

For the first time, four terracotta statues of mourning women that have long been in storage have gone on display, and are on view at the Getty Villa through April 1 [16]. Bringing these figures made in the town of Canosa in southern Italy in the third century B.C. out of storage has given Getty curators and conservators an exciting opportunity to study how they were made and to learn more about South Italian funerary art and practices.



Statue of a Mourning Woman, 300–275 B.C., Greek. The J. Paul Getty Museum, 85.AD.76.4 [16]

The four figures of young women form a striking and, perhaps, unsettling quartet. Half life-sized, with coordinated outfits, matching hairstyles, and identical poses, they are identified as mourners by their grief-stricken faces and hands raised in prayer. These “mourning women” statues represent a type of funerary sculpture that is specific to the town of Canosa, located in the Daunian region of southern Italy, and was made during the late fourth and early third centuries B.C. [17]. They are unusual for their size (they are much larger than most terracotta figures from Greece) and are comparatively rare. Only 48 are known to exist, of which just nine are in museum collections in the United

CONCLUSION

Ancient Greeks had a lot of time on their hands when they were not involved in wars. They had to time to think about and observe the universe and everything surrounding them. As such, ancient Greek scientists made significant discoveries in

Ahmed States (in addition to these four, there is one more in the Getty collection, one in the San Antonio Museum of Art, and three in the Worcester Art Museum) [13]. With so few examples in North American museums, the team here at the Getty Villa was excited by what we might learn about this sculpture group. How were these mourning women made? How do they compare to the other examples of mourners in international collections, like those at the Worcester Art Museum? And what can these mourning women tell us about ancient funerary practices? Conducting a technical analysis of the sculptures revealed some answers [17].

numerous fields such as geometry, astronomy, mathematics and medicine. Therefore the recent scientific research has help in discovering and identifying some hidden sculptures in the society.

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