

400 BCE



5.1 Parthenon, Athens

INTRODUCTION

From China to Greece, religious, ethical, and social thinking was undergoing various evaluations that contrasted with centuries-old traditions that had accepted the notion that power was imposed from the top, by force or by ancestral privilege, rather than that it should be examined from a theorized point of view. In the 6th century BCE, however, we see the emergence of a more conscious attempt to think through the question of ethics and governance. In China, for example, Confucius (551–479 BCE) envisioned a world defined by reason and proper conduct, while Daoism, which existed alongside Confucianism, stressed a sort of quietist noninterference and the paradox of complementary opposites. In India, Buddha and Mahavira challenged the highly stratified world of Vedic orthodoxy, emphasizing the discipline of self-abnegation. Buddhism might have remained tangential to history had it not been made a state religion by Asoka (304–232 BCE), the creator of the first empire of South Asia. Since Buddhism at the time was largely an ascetic practice, Asoka did not order the construction of large temples, but set up pillars with the teachings of the Buddha etched onto them. In western and Central Asia we find Zoroastrianism, an ethically based religion that perceived the world as a struggle between good and evil. Man was viewed as a potential helper of God, capable of eradicating evil. And in Greece, Socrates, Plato, Aristotle, and others engaged in vigorous debates about democracy, law, and social philosophy. Athens, adopting democracy, became seminal in prefiguring the modern state.

Politically, however, the major player in western and Central Asia was Persia. Filling the vacuum created by the collapse of the Egyptian, Assyrian, and Babylonian empires, it extended its reach from northern India to Greece, giving rise to new architectural forms in the expansive capitals of Pasargadae and Persepolis. Persepolis was a showplace of prestige. It was not a city and not a fortress, but an array of vast palaces for feasting and banqueting, all set up on a terrace that made it visible to the thousands of people who came there annually to pay their respects to the great kings. The Mediterranean, however, remained firmly under Greek control, with the Greeks, in the 5th century BCE, developing an architectural vocabulary that was later to become foundational for Roman architecture. Still today, the Parthenon is celebrated as one of the greatest buildings in the world.

The famous battles between Greece and Persia can deflect us, however, from understanding the geopolitical energy that these two areas brought to the Eurasian world. Persia was the link between the Mediterranean Sea and India; and just as Greece was working to expand its trade relations with the agropastoral communities to their north, so too the Indians sought to expand their connections to the south of the subcontinent. These three regions—India, Persia, and the Mediterranean/Black Sea—were knit into a tight economic unit.

Persia's unsuccessful attempt to conquer Greece was to have unintended consequences. It stimulated the fantasy and ambitions of Alexander (356–323 BCE), who

conquered Persia and its territories. For a while it seemed that the Greek Empire would stretch all the way to the Indus River, but Alexander's ambitions were cut short by his death in Babylon in 323 BCE. The conquered lands, divided among his generals, turned into quasi-independent states and regional power centers. The strongest of these was Egypt, ruled by the Ptolemies, who governed from Alexandria. An equally important city-state was Pergamon in Anatolia. The tiny island trading city of Delos overtook Athens as the cosmopolitan trading hub in the Mediterranean. The impact of Greek culture, generally called Hellenism in lands far from Greece, was huge. It was an aesthetic that tended toward realism, delicacy, and emotional expression. The columns and entablatures of 9th-century CE Khmer in Cambodia make it clear that, however remotely, Hellenism was still a factor in the architectural conversation. Khmer masons, probably from India, knew nothing of the Greeks, but the legacy persisted. The impact of Hellenism made its way to China as well, in the sculptural representations of Buddha.

In South America, the most important cultural developments were well-organized societies that inhabited the Peruvian lowlands: the Moche civilization to the north, and the Nazca tribes to the south. The Olmecs, who had been the most influential culture in Mesoamerica for some time, were in decline by 400 BCE, having been replaced by the Maya and Zapotec peoples, who were making the transition from chiefdoms to small states.



Achaemenid Empire ca. 559–330 BCE Alexandrian Empire 334–ca. 301 BCE Seleucid Period ca. 305–247 BCE

▲ **Pasardadae** ca. 546 BCE ▲ **Persepolis** ca. 518 BCE

▲ **Seleucid**
Founded 305 BCE

Greece: Archaic Period ca. 700–480 BCE Classical Period ca. 480–323 BCE Hellenistic Period ca. 323–31 BCE

▲ **Temple of Poseidon at Isthmia**
ca. 600 BCE

▲ **Parthenon**
ca. 447–438 BCE

▲ **Athenas Polias at Priene**
334 BCE

▲ **Propylaea**
ca. 435 BCE

▲ **Temple of Apollo at Didyma**
ca. 313 BCE–41 CE

● Socrates
Born 470 BCE

▲ **Erechtheum**
ca. 421–405 BCE

▲ **Sanctuary of Athena at Lindos**
ca. 190 BCE

▲ **Temple of Athena Nike**
ca. 427 BCE

600 BCE

400 BCE

200 BCE

▲ **Paestum**
Founded ca. 600 BCE

▲ **Miletus**
Founded ca. 500 BCE

▲ **Priene**
Founded ca. 334 BCE

▲ **Pergamon**
ca. 300–150 BCE

▲ **Second Temple of Solomon**
516 BCE

Egypt: Ptolemaic Dynasty
323–40 BCE

▲ **Temple of Horus**
Begun 237 BCE

Rise of great states in South Asia
8th to 6th centuries BCE

● Gautama Buddha
Born 556 BCE

Mauryan Dynasty
ca. 323–185 BCE

▲ **Lomas Rsi Cave**
ca. 300 BCE

China: Eastern Zhou Dynasty
ca. 770–256 BCE

● Confucius
Born 551 BCE

▲ **Tomb of Zeng Hou Yi**
ca. 433 BCE

Warring States period
ca. 481–221 BCE

▲ **Xianyang Palace No. 1**
4th century BCE

Qin Dynasty
ca. 221–206 BCE

▲ **First Emperor's Tomb**
246–210 BCE

● Laozi, founder of Taoism
Late 4th century BCE



5.2 The Achaemenid Empire

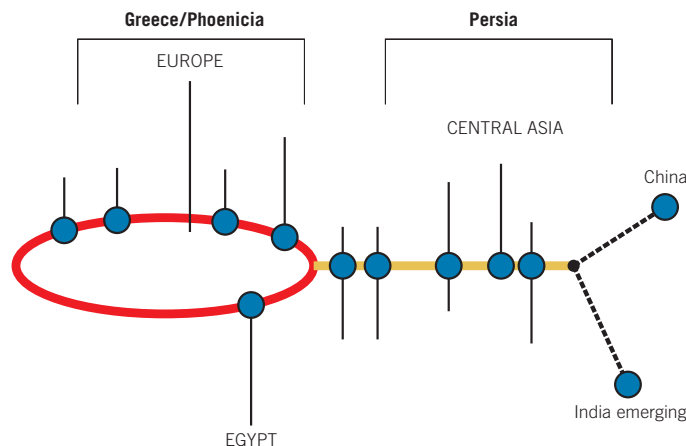
THE ACHAEMENID EMPIRE

Settlers arrived on the Iranian plateau sometime before or during the fifth millennium BCE, with one of their ancient cities, Tepe Sialk (in central Iran, near the present-day city of Kashan), experiencing various occupations until about 800 BCE. By that time, the area had become known as Medes, and powerful kings extended control southward over the Elamite civilization located in the plains around Susa. With the weakening of the Assyrians to the west, one of the Median kings, Cyaxares (625–585 BCE), invaded and destroyed their capital, Nineveh, marching all the way to the gates of Sardis, where he turned back when a solar eclipse, interpreted as a bad omen, occurred. The capital of the Median kingdom at the time was Hagmatana (“Place of Assembly”), located under the modern city of Hamadan. The Median kingdom, however, underwent a transformation when the Persians, a branch of the Medians, took control under Cyrus the Great (559–530 BCE), who picked up where Cyaxares had left off and, in effect, united the Elamite, Median, and Babylonian realms into the Achaemenid Empire (also known as the First Persian Empire) that extended from Anatolia to the Persian Gulf. The ascendancy of the Persians had important geopolitical consequences in that their lands were halfway between India and the Mediterranean. They were well aware of this, of course, and indeed, their existence depended on extending trade in these two directions.

Like all empires, the Persians went through their expansionary mode, with famous military campaigns by both Darius and his son Xerxes I (in 490 and 480 BCE, respectively) against the Greeks. Both campaigns were unsuccessful, but the Persian alliance with the Phoenicians, who contributed substantially to their fleet, brought prosperity to the Levant and its cities along the eastern Mediterranean coast. Phoenician cities like Byblos and Sidon experienced an economic upturn. The Persians, seeing for the first time the great buildings of Egypt and western Asia, were eager to match these accomplishments. From the Ionians, Persia not only collected taxes but also took their famously skilled craftsmen. An inscription of Darius’s relates

that the stonecutters who worked on his palaces were from Ionia, and the wood craftsmen were brought in from Lebanon, along with large boatloads of lumber.

By the year 500 BCE, the Achaemenid Empire had grown to become the largest and most important realm in Asia, especially under Darius (522–486 BCE), who extended the boundaries of the empire into the heart of Egypt; the Zhou dynasty in China, by comparison, was still relatively isolated. The numerous city-states in India were occupied fighting each other. The Persians seemed to have learned from the negative lesson of the Assyrians and Babylonians. Unlike them, Persian rulers attempted to gain the good will of their subject nations. Darius, for example, allowed Jews to rebuild the Temple of Jerusalem, which was finished in 516 BCE, the sixth year of his reign. Weights and measures were standardized, and an extensive road network was built—the first organized system of roads in history. The Royal Highway ran from Sardis, on the coast of Anatolia, to Susa, where it linked up, by means of western extensions, to the silk routes and to Pasargadae and Persepolis, the newly constructed Persian capitals. In fact, apart from the Greece, India, and Egypt, Persia was to a large extent surrounded by nomads and pastoralists, none of whom had extensive use of iron. It therefore stands to reason that Persia was eager to bring all of the Mediterranean into its realm of influence. Its failure to do so resulted in a double world: the linear geography of the Persians brought together by the Royal Highway, and the network geography of the Mediterranean controlled by the Greeks and Phoenicians.



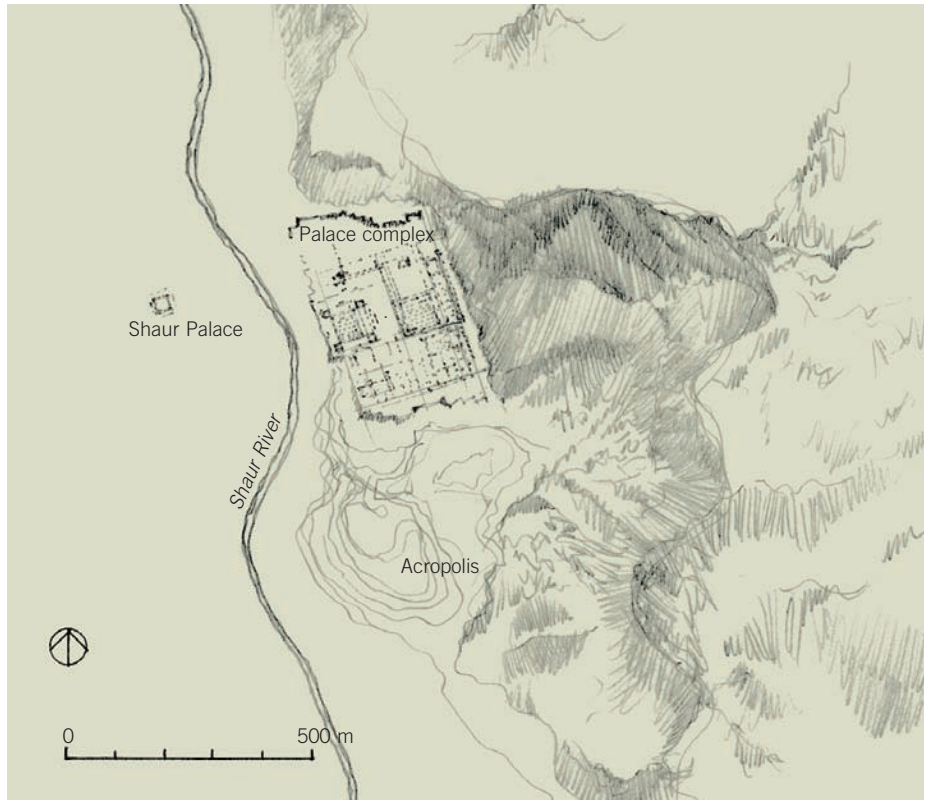
5.3 Trade diagram, ca. 400 BCE

Pasargadae and Persepolis

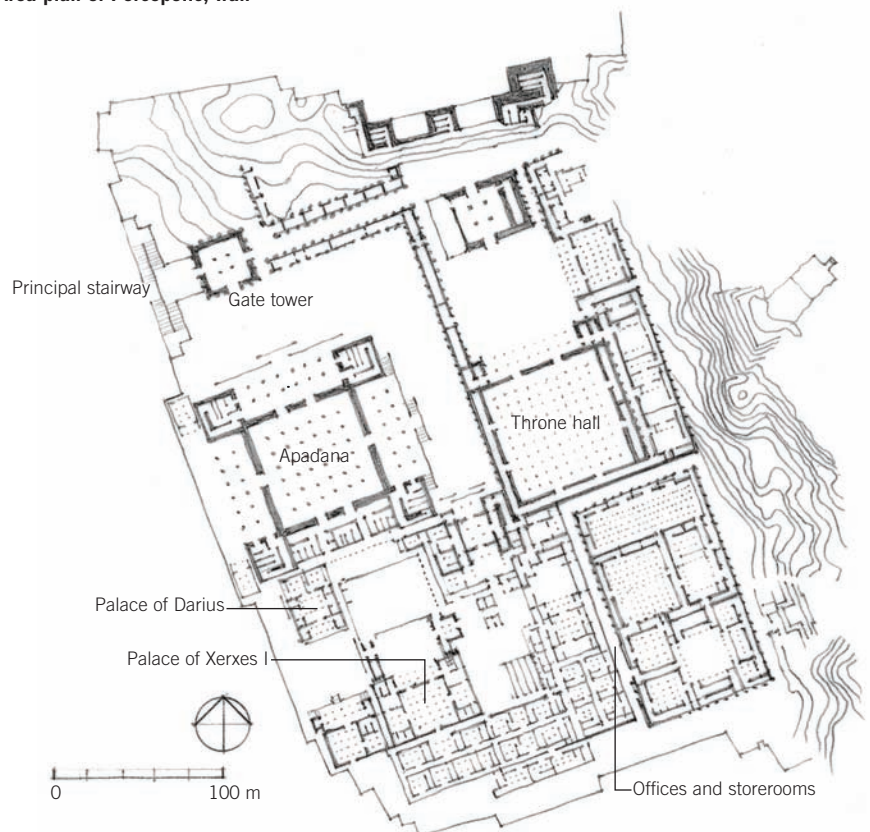
In 546 BCE Cyrus established Pasargadae as his capital, locating it at one of the starting points for the caravan route northward across the Great Salt Desert. The city's administrative core is remarkable for its spaciousness; palace, audience hall, altars, and pavilions, all distant from each other yet integrated into a parklike setting with trees, watercourses, and gardens. The Egyptians and Babylonians had palace gardens, but such an expansive landscape of palaces, gardens, and orchards was quite novel. It was also a sacred landscape, for to the north there was a sacred enclosure consisting of a walled precinct with a series of flat terraces supporting an open altar. Much later, the Persian garden was to become the prototype of Islamic gardens.

The Tomb of Cyrus the Great is located not far from Pasargadae. Its *cella* is 6 meters high and rests on a six-level stepped plinth that measures 13.5 by 12.2 meters at the base. The entire 13-meter-high edifice is of white limestone. Five huge slanted stones make up the roof. The monument, sitting boldly in the landscape, is an elegant combination of sepulcher and sanctuary. The building recalls similar, though more modestly scaled, Greek Ionian tombs. It was probably enclosed by a courtyard.

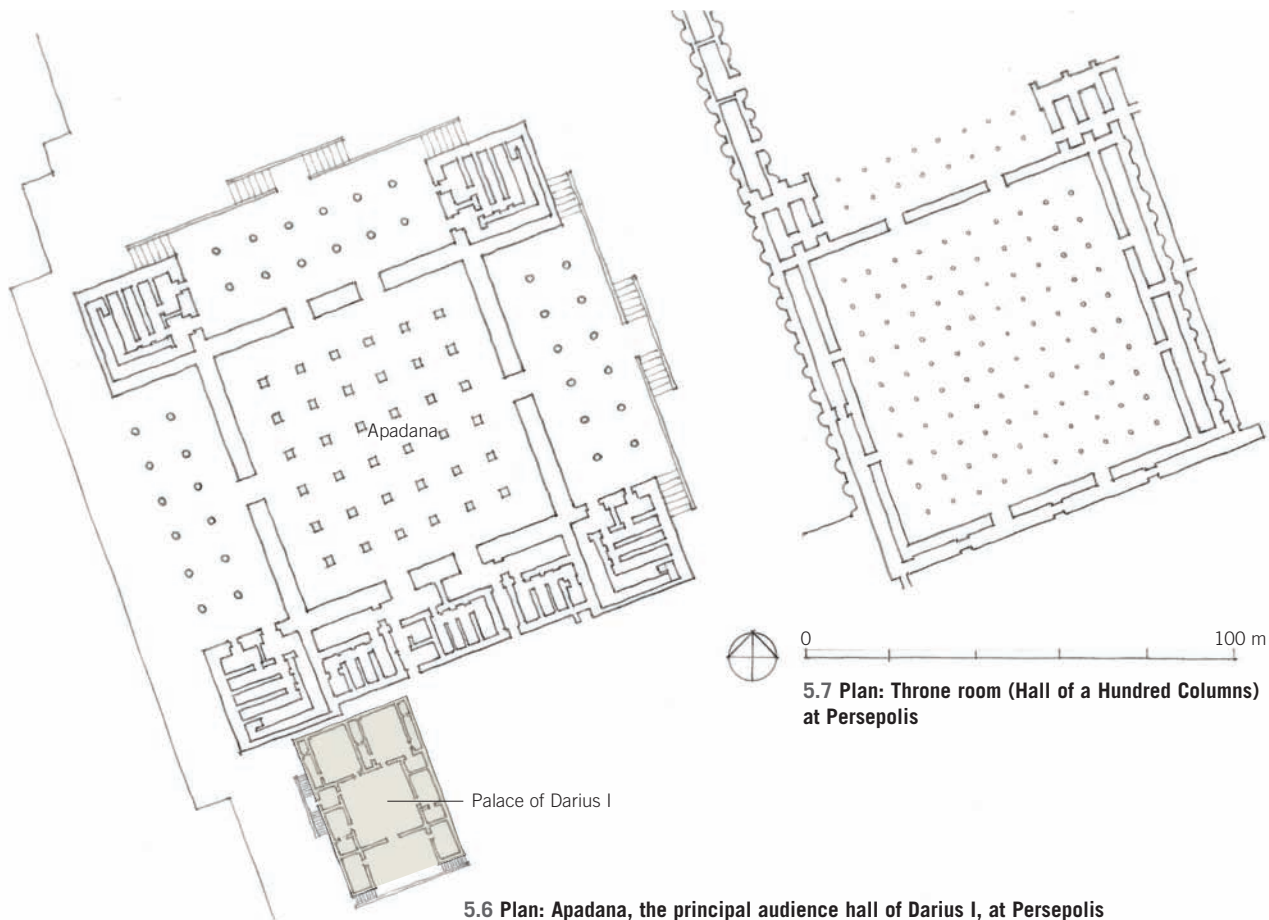
Pasargadae as a capital was relatively short-lived, for Darius designed his own capital city, Persepolis—"the city of the Persians," as the Greeks called it—located 10 kilometers to the southwest and closer to the fertile lands along the coast. It was an audacious move to a dramatic site at the edge of a large plain, the Marv Dasht basin, surrounded by cliffs. The palace is located directly under the west-facing slope of one of those cliffs. Construction went through several phases between 515 and 330 BCE. The first one involved cutting into the irregular and rocky mountainside to level a large platform 10 to 20 meters above the ground and measuring about 300 meters in length and 450 meters in width. The foundations contained complex drainage systems and water channels.



5.4 Area plan of Persepolis, Iran



5.5 Plan: Palace complex at Persepolis

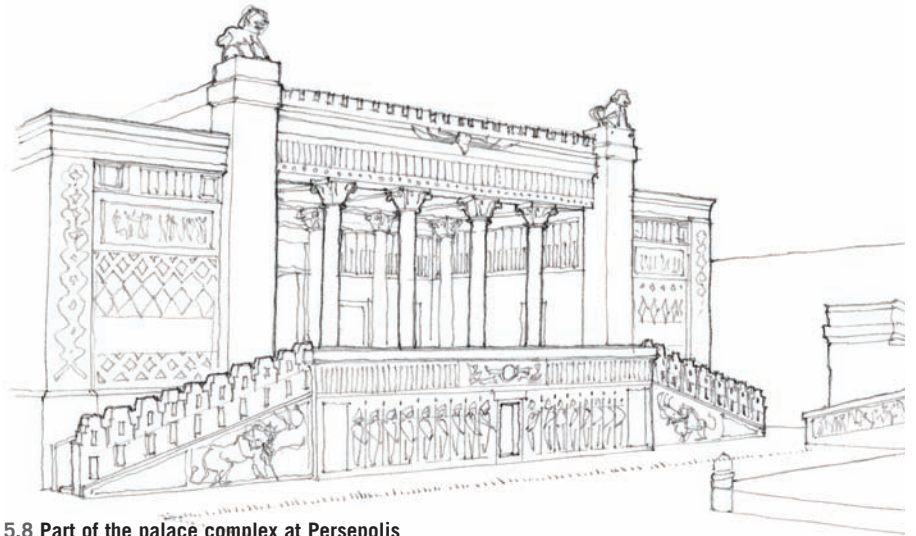


The purpose of the vast foundation was to make sure that the buildings placed on it commanded views across the valley. Of the buildings themselves little remains, since most of the walls were of mud brick, stuccoed and brightly painted. What we see today are the sections that were built in stone: the columns, foundations, and carvings.

The northern part of the terrace, which included the throne room (known also as the Hall of a Hundred Columns), measured 70 by 70 meters and represented the main section of the complex; it was accessible only to a restricted few. The southern section contained the palaces of Darius and Xerxes I, the harem, and a council hall. A huge, defensible independent structure at the southwest corner, with separate areas for

different wares, served as the treasury.

Records found show that in the year 467 BCE, no fewer than 1,348 people were employed in the treasury recording and documenting its holdings. The largest building, the Apadana ("castle" in Persian), served as the main reception hall; it had seventy-two awe-inspiring fluted and tapered limestone columns 7 meters high surmounted by bull- or lion-shaped capitals. The ceiling beams of cedar, ebony, and teak were gold plated and inlaid with ivory and precious metals. The general concept of a columnar hall dates to early Median architecture: a palace-citadel in Gobin Tepe from the 8th century BCE had a hall with thirty columns, as did Cyrus's palace in Pasargadae. This hall, however, was designed as a showstopper in scale and ornamentation.



5.8 Part of the palace complex at Persepolis

An innovative design feature was a stone-faced double staircase leading to the Apadana, the great audience hall. The walls depict rows upon rows of emissaries, soldiers, and chariot drivers. It is a virtual film strip from which we can see how the various peoples of the vast empire dressed and what kinds of ornaments, weapons, and hairstyles they sported. A group from India carries a bag of gold; a group from Africa carries tusks. These people are portrayed not as sad and subjected, but as if in a celebratory mood. One frieze shows a man, like an usher, holding another man's hand, guiding him along. At the head of the staircase was a gate, with black marble benches where visitors could wait.



5.9 Staircase leading to the Apadana at Persepolis

The frieze helps us understand the meaning of this innovative structure. It was the backdrop to a great annual celebration—perhaps a new year celebration—with people arriving from all over to bring gifts, make treaties, and socialize. The flatlands to the west of the complex would have been filled with tents of various types. The central event for a visitor was to be received by the Persian ruler in the Apadana, which probably served as the setting for grand feasts, with hundreds of people sitting on the floor around large round platters, being entertained by musicians and dancing women. Persepolis might be imagined as a modern-day convention center, where business, socializing, and celebration are all intermixed.



5.10 Staircase frieze at Persepolis



5.11 Greek and Phoenician colonies around the Mediterranean, ca. 550 BCE

GREECE AND THE MEDITERRANEAN

If Persia's empire was based on a comprehensive network of roads and the exchange of goods, the Greek enterprise was based on sea trade and manufacturing, particularly of bronze and ceramic bowls. Greeks plied the Mediterranean all the way to Gibraltar in the west and the Black Sea in the east, founding dozens of cities and trading posts. This trade network was a consequence of competition among Greek cities and of the gradual opening of the European hinterland to commerce. Massalia (now Marseilles, France), for example, was founded in 600 BCE as a trading outpost to facilitate commerce with the Gauls. Many of the city-states had their own colonies, with Miletus alone having no less than some ninety colonies spread around the Mediterranean. It was a brand-new economic model; one might call it the urban franchise model. When viewed together, the two contrasting systems—the landlocked one of Persia and the maritime one of Greece—constituted a large east-west geopolitical continuum that remained viable until the breakup of the Roman Empire in the 5th century CE.

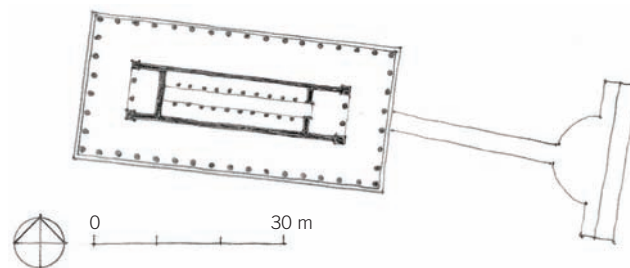
The first Greek colonies were established around 770 BCE by the Euboeans on the island of Ischia (Pithekoussai) near Naples; at Cumae in central Italy; on the island of Naxos in the Cyclades; and at Leontini in

eastern Sicily. Around 710 BCE, the Achaeans founded Sybaris and Croton in southern Italy. The Spartans founded Tarentum around 650 BCE, while Syracuse was founded by the Corinthians in 743 BCE. All in all, in a span of a hundred years, some thirty colonies sprang up. The settlers maintained close relationships with their mother cities and often appealed to them in times of war. But the colonies also began to flex their own military muscles. In 480 BCE Syracuse defeated Carthage in the Battle of Himera, and in 413 BCE it inflicted catastrophic damage on Athenian forces, which lost two hundred ships and thousands of soldiers.

The Greek Temple

Greek temple design changed considerably in the middle of the 6th century BCE, as wood was increasingly abandoned for stone. This may have been partially due to a desire for permanence, but it may also have been spurred by the influence of Egyptian architecture, with which the Greeks increasingly came in contact.

At the time, the northern part of Egypt had been divided among vassals of the Assyrian Empire. Around 664 BCE, an Egyptian prince named Psamtik was banished to the marshes. Plotting his return, he allowed the Dorians to settle in Naucratis, on the western edge of the Nile Delta, around 620 BCE on the promise that they help with his military ambitions, which were indeed successful. He was able to defeat his rivals, break with Assyria, and reunify Egypt. This opened a series of mercantile exchanges between Egypt and Greece that was profitable to both.



5.12 Plan: Temple of Artemis at Corfu (Kerkira), Greece, ca. 580 BCE

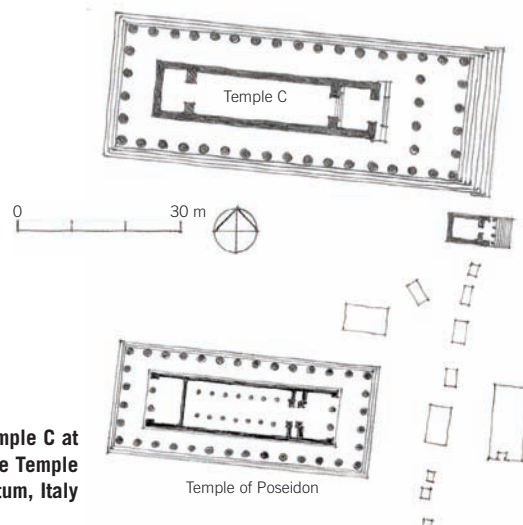
The earliest known Doric temple completely of stone



5.13 Temple of Segesta, Sicily, Italy

Naucratis became a type of duty-free zone, with the Greeks setting up factories to produce pottery and ornaments in an Egyptian style for the Egyptian market. They also imported silver, which was still rare in Egypt; in return they appear to have received Egyptian grain.

When the Greeks, accustomed to small wooden temples and simple outdoor altars, first encountered the enormous Egyptian stone temples and pyramids, they were certainly amazed, and lost no time in studying Egyptian construction techniques. They also had ample opportunity, since Psamtik had embarked on an extensive building campaign. The impact of these lessons must have been immediate, for there is very little evidence that the Doric order existed before the Greek experience in Egypt. The Greeks were, however, not unfamiliar with stone and had already begun using it for the walls of the *cella*, as is evident at the Temple of Poseidon at Isthmia. But to make columns and even the roof of the colonnade out of stone was a different matter.



5.14 Plan: comparison of Temple C at Selinus, Sicily, Italy, with the Temple of Poseidon, at Paestum, Italy



5.15 Greek temple sites



5.16 A collapsed column showing typical drums of which the column was made.

One can follow the development of the Doric order at the Temple of Poseidon at Isthmia, where, by the time of its completion around 600 BCE, the oak columns were replaced by stone columns. (A Roman visitor in 176 CE reported a peculiarity: one oak column was still standing.) Some of the first stone columns were huge monoliths; others consisted of superimposed drums of varying heights and diameters.

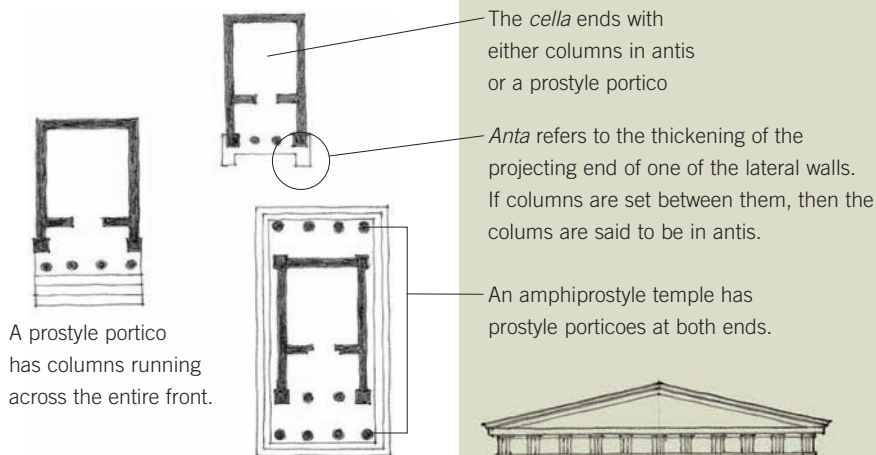
The wealth of the Sicilian colonies helps explain why many of the early Greek temples were not in Greece, but in Sicily and Italy. At Selinus, on the southern coast of Sicily, seven temples were lined up on the acropolis and a nearby ridge. They date from 570 BCE to 409 BCE. At Paestum in central Italy, there arose a temple of Hera (550 BCE), a temple of Demeter (520 BCE), and a temple of Poseidon (460 BCE). In contrast to the early temples at Selinus, the later temple of Poseidon in Paestum opened up the *cella* by means of an inner colonnade and achieved closer interaction between the body of the temple and the *pteron*, or columnar surround.

There was an important difference between Greek and Egyptian stone preparation. In Greece, stones were brought to the construction site in an almost finished state, whereas in Egypt, stones for columns arrived at the site still quite rough (apart from horizontal cuts), with much of the finishing taking place when the stones were in situ. This difference would have significant impact on Greek architectural developments, as it would allow for an ever-increasing elaboration of detail, proportion, and form.

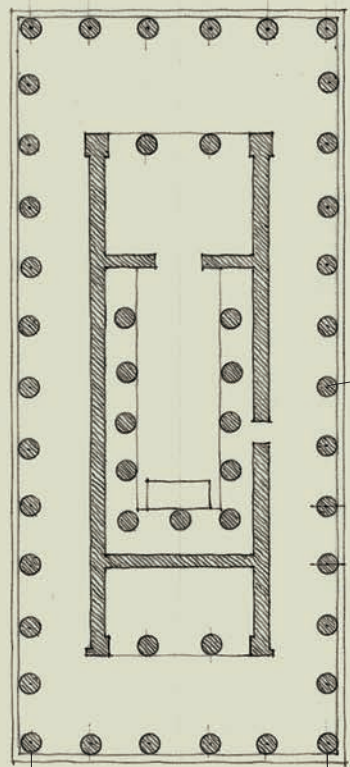
Greek and Roman temples are described according to the number of columns on the entrance front, the type of colonnade, and the type of portico. The Parthenon, for example, is an octastyle peripteral temple with hexastyle porticoes at both ends. The Temple of Zeus at Olympia is a hexastyle peripteral temple with distyle in-antis porches at both ends. The basilica in Paestum is a rare enneastyle pseudodipteral temple with a tristyle in-antis portico.

Almost all surfaces of the temple—the steps, columns, capitals, walls, even the figures on the pediment—were painted in bright reds, blues, yellows, and black. What we know about the colors used for the temples comes from both archaeological and literary sources. The pigments were made from minerals, soot, ground stones, vegetables, and animal matter. The purple dye, for example, came from shellfish; the yellowish color that was applied to columns and beams came from saffron. The colors were sometimes applied with wax but usually on stucco.

Though today we may perceive Greek temples as isolated objects, they were actually framed in the landscape by a *temenos*, or sacred precinct, which could consist of something as simple as a row of stones but could also be a built-up wall. The *temenos* was the territory of the deity and had to be approached in a prescribed manner and entered only at a special place defined by a *propylon* (i.e., *pro-pylon*, or “before the gate”).



A prostyle portico has columns running across the entire front.



5.17 A comparison of Greek temple types

The *cella* ends with either columns in antis or a prostyle portico

Anta refers to the thickening of the projecting end of one of the lateral walls. If columns are set between them, then the columns are said to be in antis.

An amphiprostyle temple has prostyle porticoes at both ends.

The most basic element of the temple was the colonnade. Though so common today that it might seem to be a natural architectural form, it was actually a unique innovation of the Greeks. Called a *pteron*, it was a sacred form always reserved for temples. *Pteron* means “wing” or “fin,” but also “oar” and “sail.” It perhaps refers to early awnings placed against buildings. But it also indicates that the Greeks saw the building as a dynamic location—as something that literally catches the wind and hears the voices of the gods. In addition, the *pteron* evoked the idea of a grove of trees, especially because columns were originally made of wooden trunks. The *pteron* has also been associated with stout soldiers forming a phalanx—a rectangular military formation—symbolically protecting the statue within the *cella*.

The following terms describe the type of colonnade surrounding the *naos* of a Greek temple:

- Peripteral: one row of columns
- Dipteral: two rows of columns
- Tripteral: three rows of columns
- Pseudodipteral: suggesting a dipteral colonnade, but without the inner colonnade

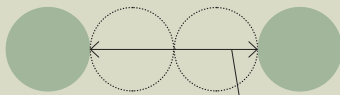
The following terms refer to the number of columns on the entrance front of a Greek temple:

- Henostyle: one column
- Distyle: two columns
- Tristyle: three columns
- Tetrastyle: four columns
- Pentastyle: five columns
- Hexastyle: six columns
- Heptastyle: seven columns
- Octastyle: eight columns
- Enneastyle: nine columns
- Decastyle: ten columns

5.18 Greek temple terminology

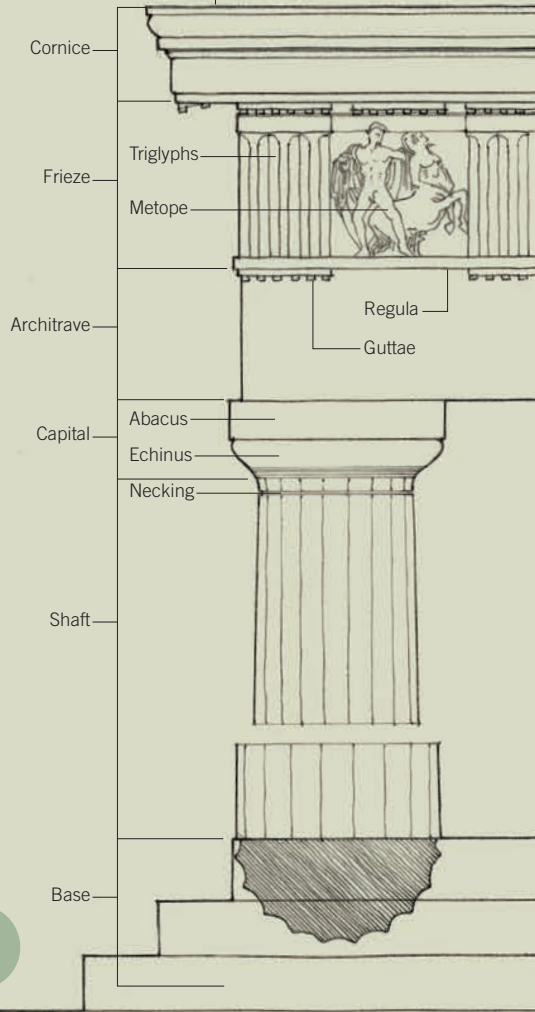
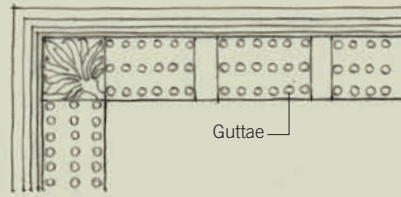
A corona is the projection at the top of a cornice; the word was associated with the forehead and with controlling things from above. It was also associated with the eagle, the bird of omen and Zeus's favorite bird. For these reasons it became the appropriate element with which to top off a temple.

On the abacus of a capital rests the architrave, the main stone or marble beam running from column to column. Above the architrave is the frieze, which consists of alternating triglyphs and metopes. Beneath each triglyph, on the face of the architrave, is a smooth band—the regula—on the underside of which hang six stone pegs, or guttae. There is normally one triglyph to each column and one to each intercolumniation. The metopes were often decorated with paintings or relief sculpture depicting stories of the local hero or episodes from the myths associated with the god to whom the temple was dedicated.



- Pycnostyle: 1.5 diameters
- Systyle: 2 diameters
- Eustyle: 2.25 diameters
- Diastyle: 3 diameters
- Araeostyle: 3.5 diameters

Intercolumniation refers to the space between columns, expressed in column diameters. This systematization applies mainly to Hellenistic and Roman temples.



5.19 Elements of the Doric order

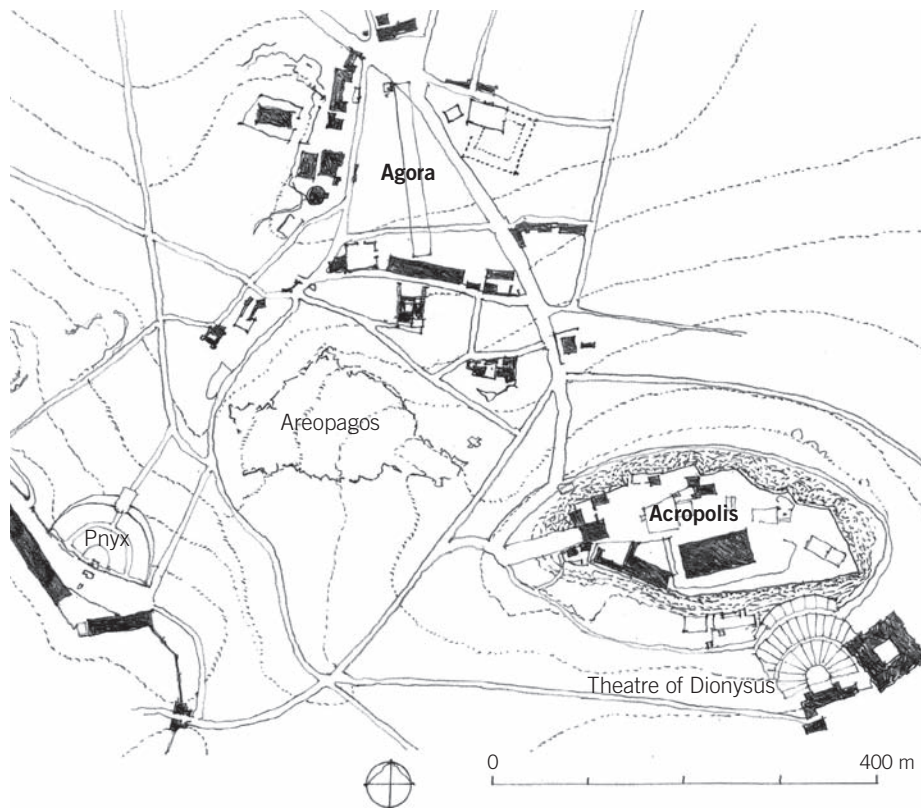
The temple rested on a *crepis*, the base of a building but also a shoe or sandal—a footing, in other words, proper to the divine presence. This foundation was constructed from roughly dressed masonry that was not concealed below the ground but was designed to appear as steps leading up to the platform on which the temple's columns rested.

The capital, which derives its name from the Latin word *caput* ("head"), was in Greek terminology the *kranion*, which refers to the top of the head or skull. The Doric capital, carved out of a single stone block, consists of a spreading convex molding, the echinus—a word that was applied to almost anything curved and spiny found in nature—and a low square block, the abacus.

The column shaft tapers from the bottom upward in the form of a delicate curve called an entasis, or swelling. The shaft of a Doric column almost always stands directly on the floor, without a base. Early columns from the 6th century BCE are often monolithic, but later the shaft came to be composed of superimposed drums, which were rounded by turning them on a lathe.

The drums were doweled together with wooden or bronze spikes enclosed in concavities at the center. The shafts were fluted after the columns were in place. There are usually twenty broad and shallow flutes that meet to form sharp edges, or arrises. The joints between the columns would have been concealed by marble stucco.

The steps were often too tall to ascend comfortably, so a flight of stairs or a ramp was provided at the entrance. This demonstrates that the steps had nothing to do with the necessities of construction, for they could easily have been designed with more risers. Instead, the steps were intentionally built to make the temple appear as if it were rising on a natural outcropping, cleaned and smoothed in preparation for the building.

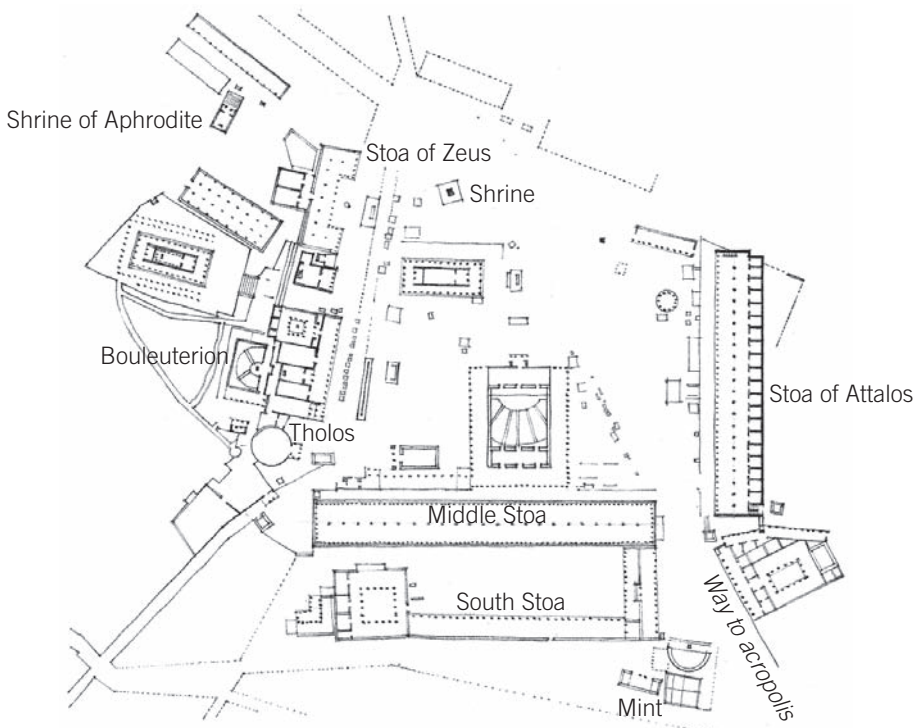


5.20 Site plan showing the relationship between the agora and the acropolis, Athens

The agora was also the site of the Leokoreion, a small shrine associated with a well in the northern part of the agora. It was named after the daughters of Leos, who were sacrificed to save the city from a terrible plague. Also on the agora was a stoa, a long colonnaded building with shops on the back facing the agora. These shops were for the more elite merchants. Council meetings were held in a building known as the bouleuterion. The law courts were located there as well. The central space was used for markets, ritual gatherings, or the making of speeches and pronouncements. But most importantly, the area served as a market. One could find almost anything in the agora: confectioners, slave-traders, fishmongers, vintners, cloth merchants, shoemakers, dressmakers, merchants selling cookware and other household goods. Socrates famously taught his students by walking back and forth along the Athenian stoa, questioning the market-goers on their understanding of the meaning of life and attracting a crowd of Athenian youth who enjoyed seeing the more pretentious of their elders made fools of. One listener was the young poet who became a student of Socrates under the name Plato.

Athens

The city of Athens had three main components: the acropolis, which was the great ritual and spiritual core of the city; the agora, which was its economic hub; and the urban fabric itself, where one found small shrines and temples. The agora, probably laid out in the 7th century BCE and developed in the 5th and 4th centuries BCE with the construction of temples to Hephaestus, Zeus, and Apollo, was a unique Athenian invention. It was a specially demarcated space outside of the core of the city that brought together the different dimensions of urban life. Though often called a public space, it was just as much a religious space as a social one. One of the key temples overlooking the agora was the temple to Hephaestus. Hephaestus was the god of the smithies, and his presence there was a testament to the role of bronze casting in the Athenian economy. It was set on a hill to the west, its elevated presence signifying its importance.



5.21 Site plan of the agora of Athens



5.22 Calvacade frieze, southern wall of the Parthenon, Athens

The ancient Dorians, when they arrived in Greece from the north, had sacred groves to which they would periodically go for ritual communal events. What they learned from the Egyptians was to dramatize these journeys into spectacular processions involving music and dancing. They did not, however, hold processions with the deity as the Egyptians did, and in this they held true to their fundamental belief in the deity being fixed in special, sacred places. Over time the number of these processions multiplied, with some becoming elevated to the level of state protocol. One was the Dionysia, a large Athenian festival in honor of the god Dionysus that was held in early spring. It involved a procession of phalluses and military equipment, and ended in theatrical performances. A few weeks later, there was the more official Panathenaic procession that started at the Leokoreion and ended at the acropolis. That it began at the Leokoreion was an indication of the procession's attempt to connect deeply to the principle of sacrifice and triumph.

The procession was an elaborate affair. For months before, a team of maidens from aristocratic families would weave a special new garment for the deity in the temple. By the late 5th century BCE the robe was as big as a ship's sail and was, in fact, fixed on the model of a ship mounted on wheels. This ship-cart had a crew of priests and priestesses wearing golden and colorful garlands. When all was set, a nocturnal festival took place, and at sunrise a new fire was fetched, carried in a torch race from outside the city—where sacrifice was made to Eros and Athena together—through the agora, and up to the altar of Athena on the acropolis. A procession then formed in which all members of the community had their place. The high point was the sacrifice, in which more than a hundred animals were slaughtered at the Great Altar, and the meat distributed to the whole populace in the agora. From 566 BCE onward an athletic contest was added to the program of activities, including foot races, wrestling, horse racing, boxing, and javelin-throwing.

The frieze of the Pantheon seems to portray such a celebratory procession. The narrative of the frieze begins at the southwest corner, where the procession appears to divide into two separate files.

What does it represent? According to traditional interpretation, it depicts the annual Panathenaic procession. But this view, though oft repeated, has been challenged by scholars who argue that it must be a representation of a mythological moment, not a real procession involving mortals. Since the pediments and metopes all illustrate mythological scenes, it is natural to reach for a mythological explanation for the frieze as well. John Boardman has suggested that the cavalry portrayed on the frieze depict the heroization of the soldiers who fell at Marathon in 490 BCE, and that therefore these riders were the Athenians who took part in the last prewar Greater Panathenaia. Chrysoula Kardar has ventured that the relief shows an imagined first Panathenaic procession as instituted under the mythical King Kekrops.

A perplexing issue is that the frieze's location high in the building's porch would have made it difficult to see. In the museum today, the figures are on eye level, whereas originally they were 7 meters up. This suggests that they were not meant to be "seen" in the conventional sense.

Thomas Bruce, the Seventh Earl of Elgin, dismantled about two-thirds of the frieze and had it shipped to England between 1801 and 1806, and today the so-called Elgin Marbles are in the British Museum, to the outrage of many. In looking at the frieze, one has to remember that it, as indeed the entire building, was painted.



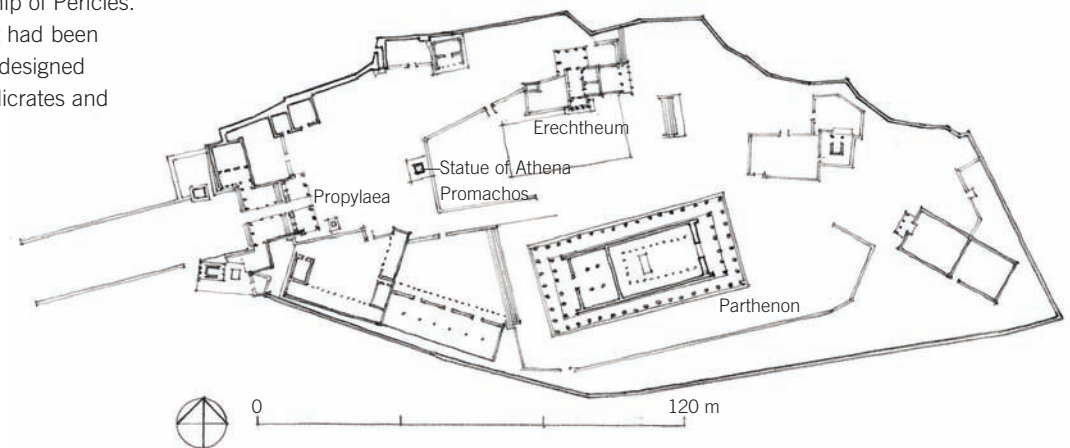
5.23 Approach to the Parthenon from the Propylaea

The Parthenon

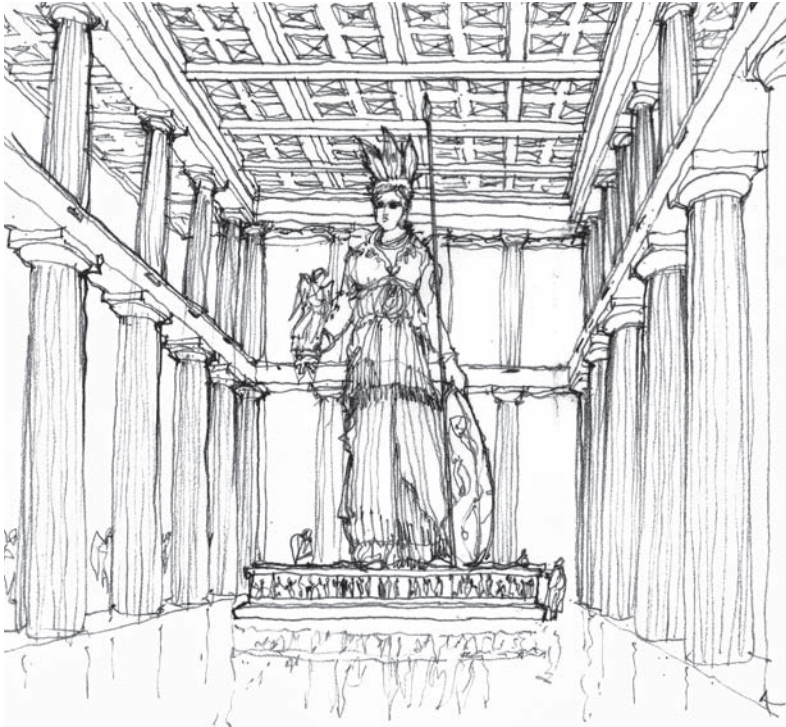
Because of the constant warfare in ancient Greece, almost every city was divided into a lower town and an acropolis, which literally means a “city on the height.” The acropolis of Athens was no exception. It sits on a great isolated slab of limestone tilted toward the west side, from which it had to be approached. Already fortified with a wall by the Mycenaeans, it was held to be invested with divine presences from ancient times. The waters from a spring on its southern flank are today still considered to have healing powers. An olive tree rooted to a rock on its summit was dedicated to Athena. It was here that the Parthenon was built under the political leadership of Pericles. The building, replacing one that had been destroyed by the Persians, was designed by Ictinus (with advice from Callicrates and

Phidias) and built between 447 and 438 BCE. Designed as a monument to Athena and housing her sacred statue, it was bigger than any temple ever before built on the Greek mainland, its stylobate measuring 30.9 by 69.5 meters. Early accounts of the temple call it Hekatompedos, or “hundred-footer,” referring either to its overall width or the length of the large eastern room of its *cella*, also known as the *hekatompedos*.

But size was not its only unusual feature: the east and west facades were lined with eight towering Doric columns, making the Parthenon the only octastyle peripteral temple built in ancient Greece.

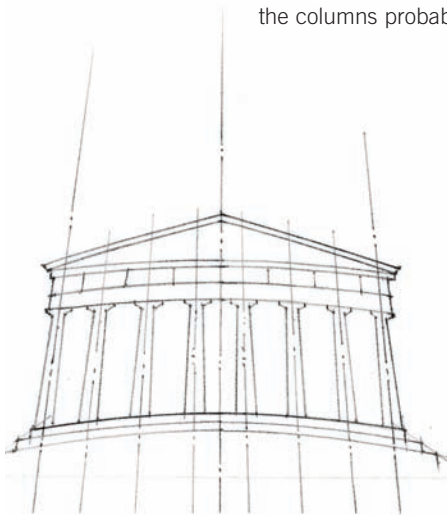


5.24 Plan: Acropolis at Athens



5.25 A conception of the interior of the Parthenon, based on the evidence

The interior of the *naos* has been variously reconstructed, in some places with a standard roof (as in figure 5.25) or with an opening in the center. It is clear, regardless, that the columns in the *naos* supported a second tier of smaller columns above, and that there was a shallow rectangle in front of the statue of Athena, possibly used as a reflecting pool, although such a pool would have been highly unusual. The building would have been painted inside and out, with the columns probably a reddish hue.



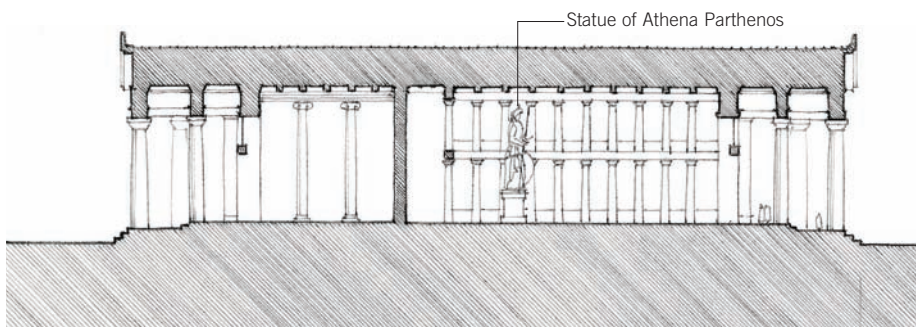
5.26 Diagram of the curved stylobate and inclined vertical axes of the perimeter columns of the Parthenon

Underlying the construction is a system of refinements that control the delicate curvature of horizontal lines, the elegant convergence of vertical lines, and the nuanced size and spacing of the fluted marble columns. The stylobate was not a flat plane but rather like a section of a very large sphere; it curved upward toward the middle, rising 41 millimeters on its short sides and 102 millimeters on its long flanks. This curve was carried upward through the entire structure, imparting a subtle upward curvature even on the architrave, the cornice, and nearly every “horizontal” line of stone. Furthermore, every column was given an entasis, or a slight bulging of the middle of the column’s shaft. The entasis measures only 20 millimeters of deviation from a straight line. Moreover, each of the forty-six perimeter columns was tilted slightly inward, with the corner column tilting on a diagonal. If the columns of the short sides were extended upward, they would meet around 4.8 kilometers above the roof.

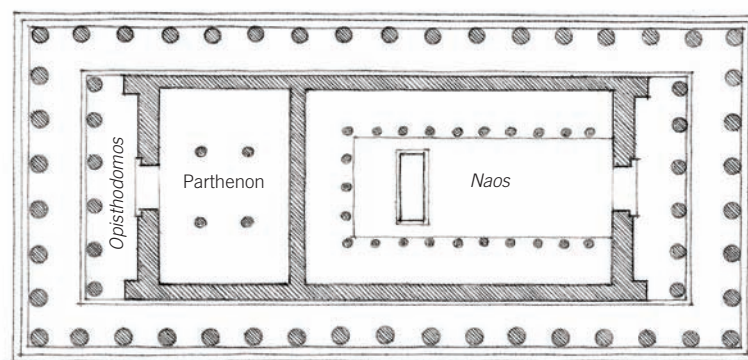


5.27 Detail of the pediment of the Parthenon

While each of these refinements have functional advantages—the curvature to shed water, the angling to increase lateral structural support during earthquakes, and the corner adjustments to maintain proper column alignments with the metopes above—scholars, beginning with the Roman architect and historian Vitruvius, have argued that the nuances were mostly for aesthetic effect; and indeed, in no other temple was this visual tension as subtle and refined as in the Parthenon. It nevertheless seems astonishing that in contrast with other attempts at making grand statements, where architects sought height or the addition of special embellishments, here the architects sought a level of precision that was almost imperceptible, yet could not be matched anywhere else in the world at the time. How these astonishing curves were made is something of a mystery, since the building, like all Greek temples, is made of precut pieces allowing for few on-site adjustments.



Section



Plan



5.28 Section and plan: Parthenon, Athens



5.29 Caryatid porch, Erechtheum, Athens

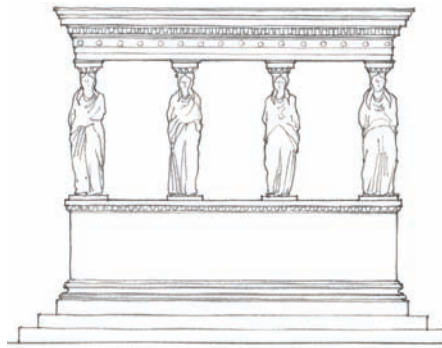
Erechtheum

Unlike Egyptians, Greeks never added new elements to a temple. New structures, of course, could be added to the precinct, but the temple itself was not changed unless it was somehow destroyed and rebuilt. It would be wrong, however, to assume that Greek architects were unable to think beyond the inflexibility of the temple form. The Propylaea and the Erechtheum on the Athenian acropolis are examples of rather complex buildings whose architects had to accommodate a range of programmatic and ritualistic purposes. The Erechtheum wraps up different mythical narratives into a single composition. It was built on two levels with three porticoes of different designs; there were four entrances besides the subterranean one under the north porch. This irregularity was due to the necessity of designing a building around the spots that were essential to the narrative of the founding of Athens. Erechtheus, after whom the Erechtheum is named, was the mythical founder of Attica and the “earth-born king of Athens.” At that time, it was believed that gods challenged one another to be honored by cities. Unfortunately, both Poseidon and Athena aspired to control Athens, so Erechtheus set up a contest in which each had to make a

gift to the city. Poseidon drew salt water by striking the ground on the acropolis with his trident, while Athena grew the first olive tree on its slopes. Erechtheus judged Athena’s gift to be the most useful to the people of Athens, and the city was named in her honor.

The central elements of the drama can be read by entering first through the north porch dedicated to Poseidon. Its expansive design takes in the grand vista and can be seen from the agora below. On the floor to the left of the door, a type of window looks down at the bedrock, where one can see the indentations of Poseidon’s trident. An opening in the roof above indicates the space through which the trident was thought to have flown. The great door leads to a narrow room that contained a shrine to Erechtheus. Under the floor was a cistern containing the salt water of Poseidon. A door to the right leads to the sacred court containing Athena’s olive tree. Continuing on the axis made by the porch of Poseidon, one goes up the flight of stairs to the caryatid porch, which today sits isolated in the field of ruins.

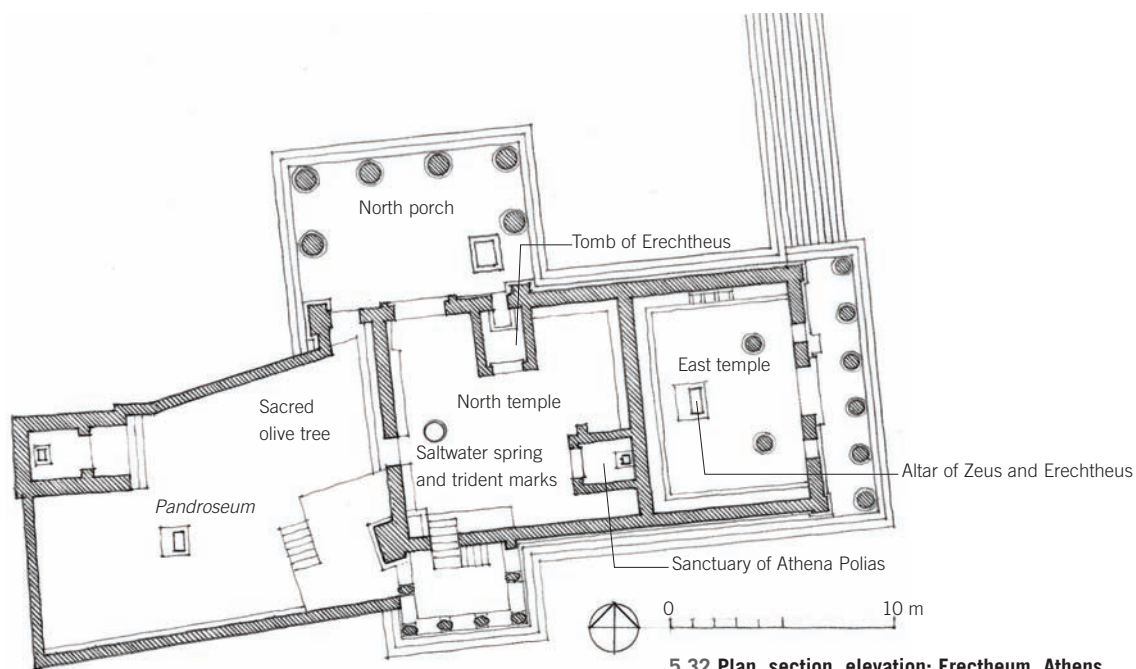
Although the plan of the building may seem chaotic, the temple makes sense as a three-dimensional celebration of the founding myth of Athens. The north porch is the largest and projects forward two intercolumniations, the height of its roof being almost level with the eaves of the central block. The south porch is less than half as high, but it is raised upon a terrace. Instead of columns, there are caryatids—columns



5.30 Drawing: Caryatid porch, Erechtheum, Athens



5.31 Erechtheum from the south, as it stands today

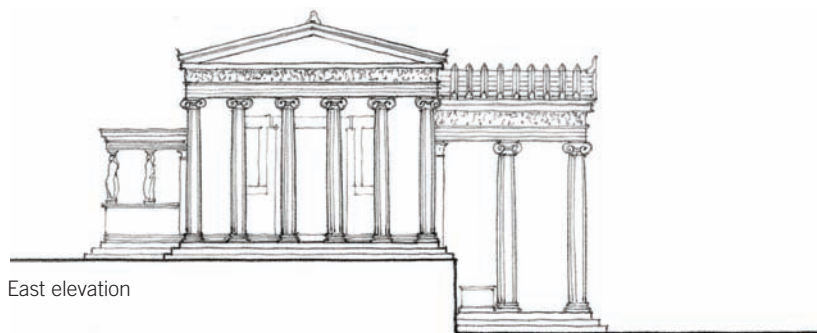


Plan

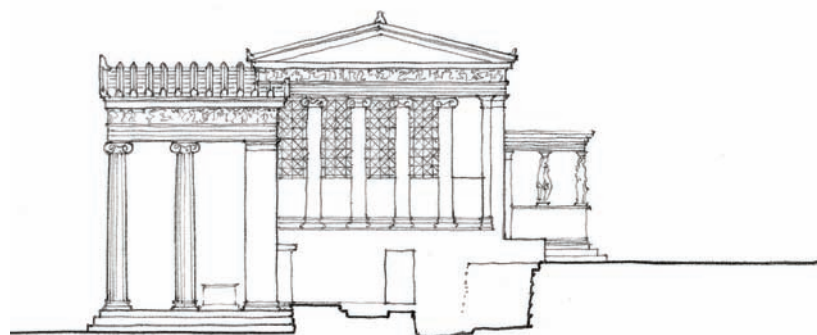
5.32 Plan, section, elevation: Erechtheum, Athens

in the shape of young women—carrying the load of the entablature on their heads. The east porch consists of six Ionic columns. The central block that holds all this together has two levels corresponding to the north and east porches. Three doors lead into it: the great door of the north porch, a plain opening at the bottom of the west wall, and a small door on the south side, to which a staircase leads down from the interior of the Caryatid porch.

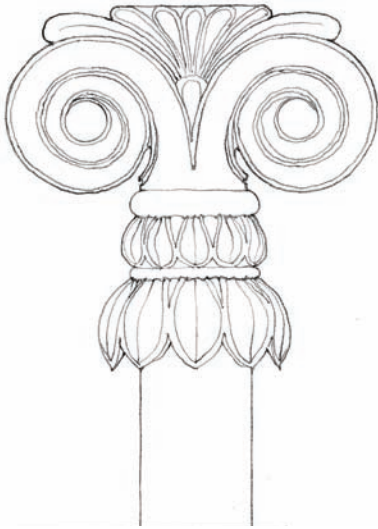
Rising up over the entire story and at a 90 degree cross-axis is the edifice of the victor, Athena, facing east. At the diagonal, upon descending the external stairs on the northern side and before entering the north porch, was an area dedicated to Zeus, the ultimate arbiter of the contest. His position seems to address the dynamic northeasterly pull of conical Mt. Lykabettos, for it, too, plays into the story. According to legend, Athena was absent from her city to retrieve a mountain to use on the acropolis. Her sisters were curious about the chest in which Athena was protecting the young Erechtheus and opened it, contrary to Athena's orders. She became so angry that she dropped the mountain. How this plays out in the design is unknown, but from the agora below the acropolis, the mountain and the Erechtheum are clearly in dialogue.



East elevation



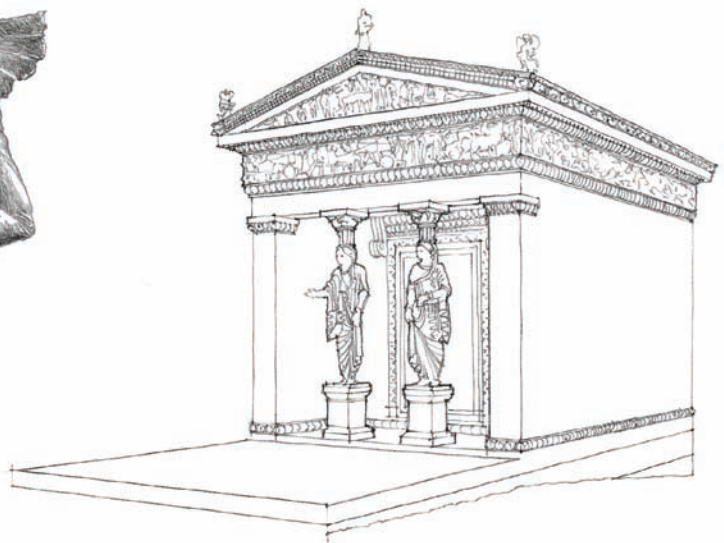
Section



5.33 Ionic capital from the temple at Neandris



5.34 Bronze female figure with headdress



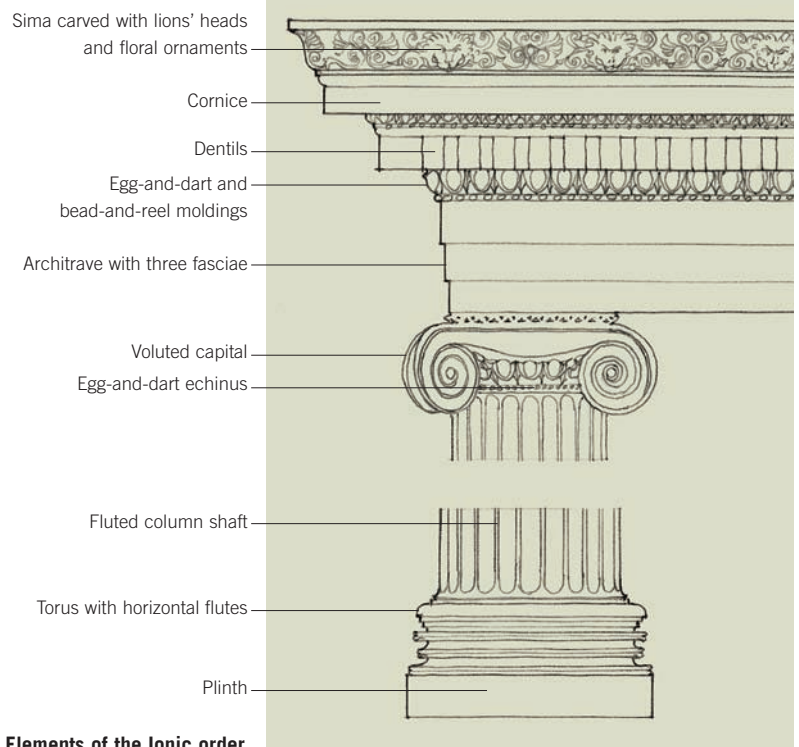
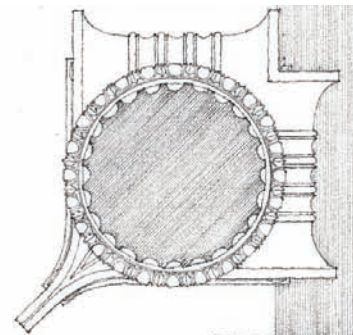
5.35 Treasury of Siphnos at Delphi

Ionic Order

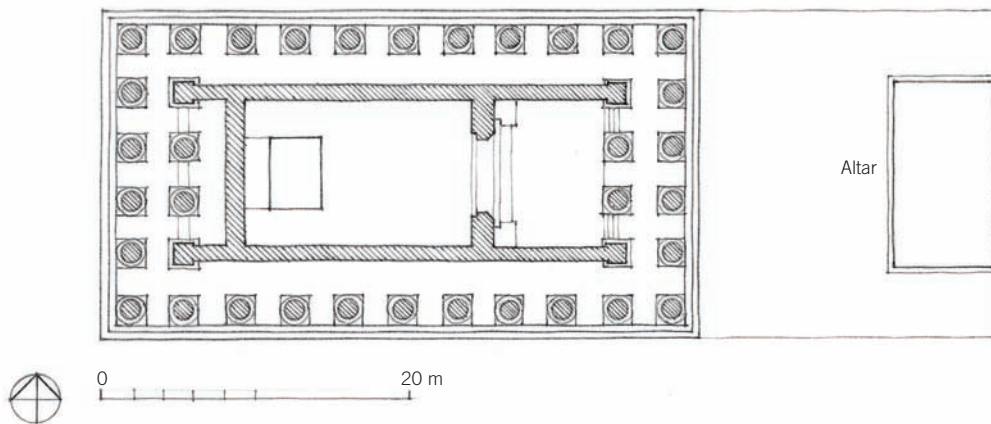
Though usually discussed after the Doric, the Ionic should not therefore be regarded as later. The development of the Ionic and the Doric orders paralleled each other, but stylistically there are notable differences. First, Ionic columns rest on molded bases that stand on square plinths. These moldings consist of combinations of tori, scotias, and rondels, often in pairs. The capital has different front and side views and is meant to be seen chiefly from the front and back. At the base of the capital there is a flat-topped molding with a profile like that of the Doric echinus, but it is usually carved with egg-and-dart moldings. Above this lies the volute, its loose ends winding down in dropping spirals on each side of the shaft and ending in buttonlike *oculi* (eyes). The entablature usually consists of three bands of fasciae of unequal height, each projecting a little beyond the one below it. Above it runs a band of egg-and-dart molding and over that a row of dentils, superseded by a projecting cornice often decorated with lions' faces and plant motifs.

The Ionic capital came into its own during the 7th century BCE. Unlike the Doric, the Ionic did not derive from a structural system, but perhaps from symbolic headdresses or from poles surrounded by bundled vegetation marking sacred areas. The capital consists of two large spirals that spring upward and

outward from the shaft, as if a pliant stick were split at the ends and each curved outward halfway to form a spiral. The space between the spirals was decorated with a fanlike pattern. Capitals of similar form were found on the island of Lesbos.



5.36 Elements of the Ionic order

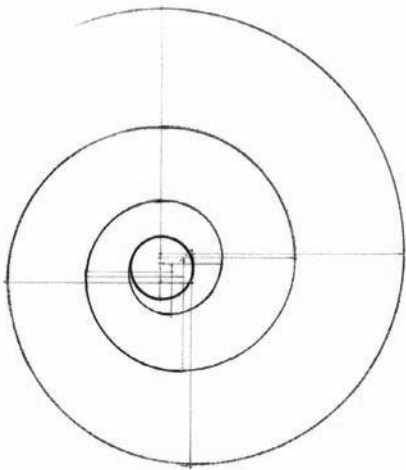


5.37 Plan: Temple of Athena Polias at Priene, Turkey

To construct the volutes, craftsmen devised a system of gridded holes into which pegs were inserted and around which a cord was wound and then, with a stylus attached, unwound. In essence, the spiral was a series of interconnected quarter circles and semicircles. They are not “organic” but precisely calibrated mathematical puzzles that come in a vast variety depending on how tightly wound the spirals are. One of the most elegant Ionic temples is undoubtedly the small Temple of Athena Nike (ca. 425 BCE) at the acropolis in Athens.

Though proportional systems were most certainly in play in the design of the Doric order, the formalization of the system began with the Ionic. A temple of the Ionic at its most classic is the Temple of Athena Polias at Priene (ca. 334 BCE) by the architect Pythius, who wrote a book explaining the proportions of this temple. The larger proportions were worked out in similar ratios of 1:2. The overall dimensions of the stylobate measured 19.5 by 37.2 meters, for a ratio of 11:21. The axial spacing between the columns was twice the width of the square plinths. The antae of the porch and the *opisthodomos* in the rear stood opposite the penultimate columns of

the ends and sides and enclosed a rectangle measuring 12 by 30 meters, for a ratio of 1:2.5. No longer did architects manipulate the form to adjust for optical illusions; geometrical precision was now in order. The Ionic was codified further around 150 BCE by the architect Hermogenes, also of Priene. He worked out a series of ideal proportions that were to influence Vitruvius a century later. According to this system, the height of the column varied inversely according to the axial spacing, so that the sum of axial spacings and height was always 12.5 column diameters.



5.38 Development of the Ionic spiral



5.39 Temple of Athena Nike, acropolis, Athens, Greece