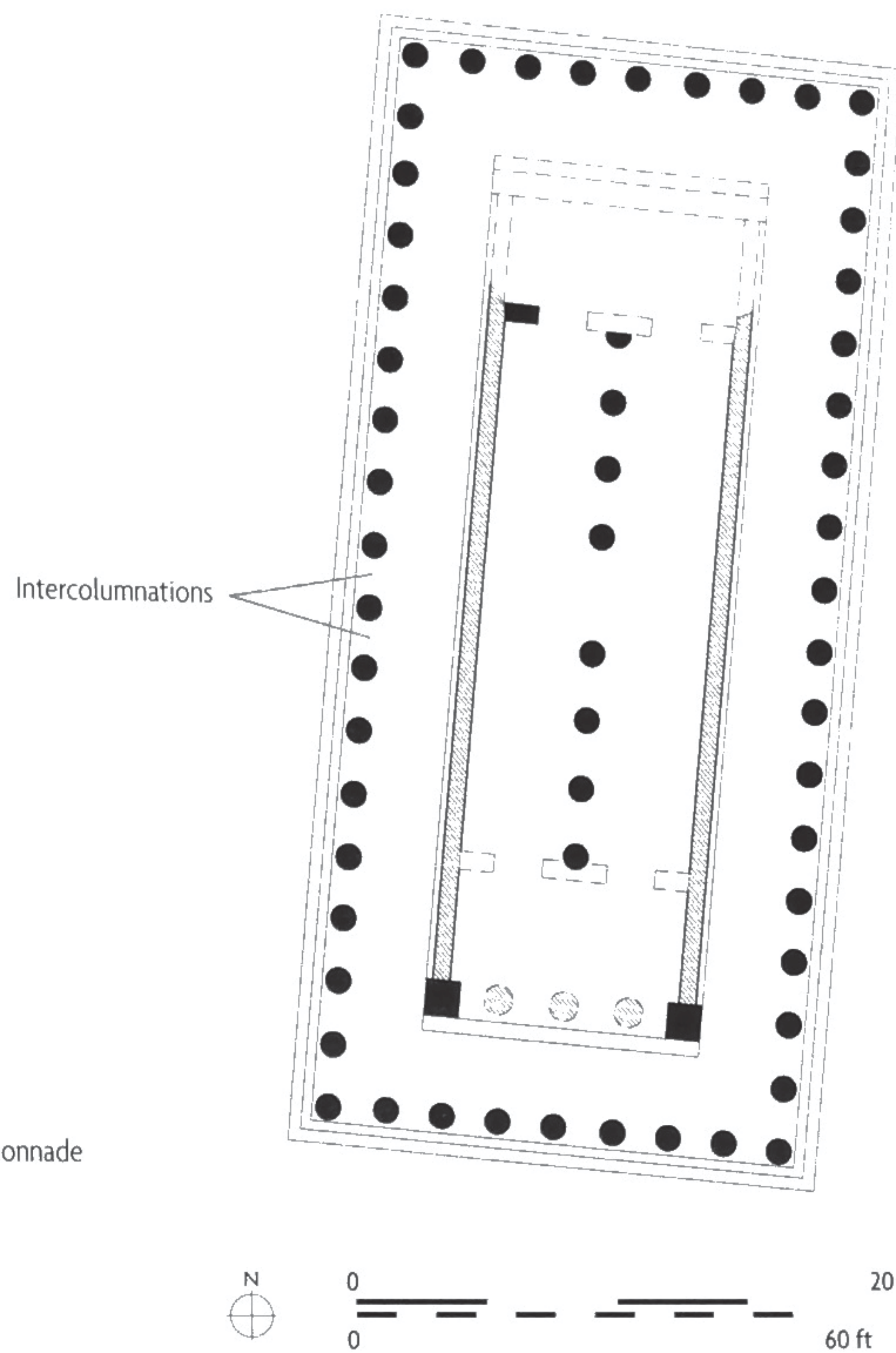


2.15 Plan of the Temple of Hera, Olympia, ca. 600–590 BCE.

The original wooden columns of this early Greek temple were rebuilt in stone, perhaps to provide better support for heavier roof tiles that replaced thatch.



2.16 Plan of the Temple of Hera, Paestum, ca. 550 BCE.

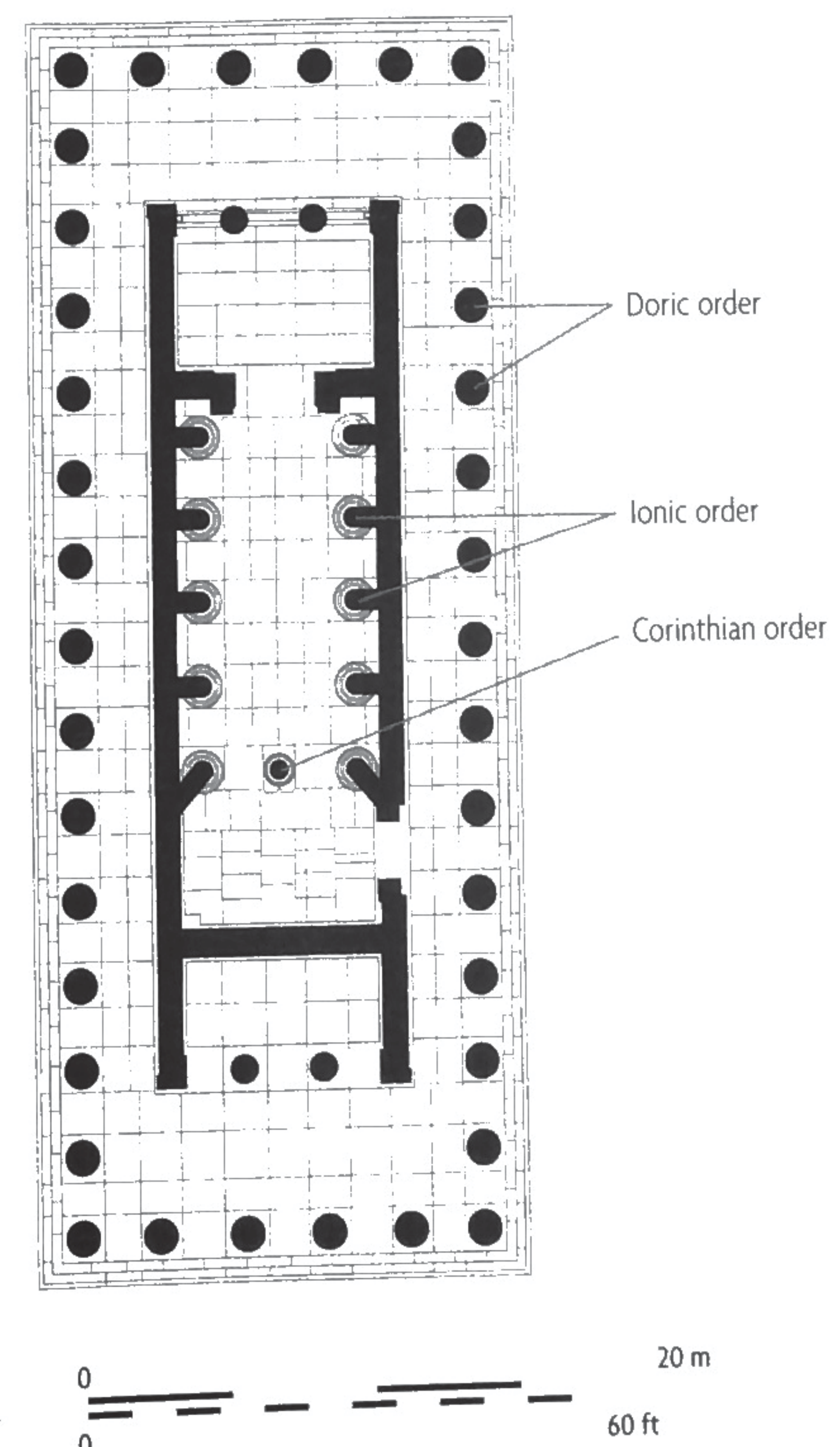
This temple presents one of the earliest examples of the Doric order. It is unusual in having an odd number of columns across the short side, placing a column in the center where one would expect an intercolumnar space for central, axial entry.

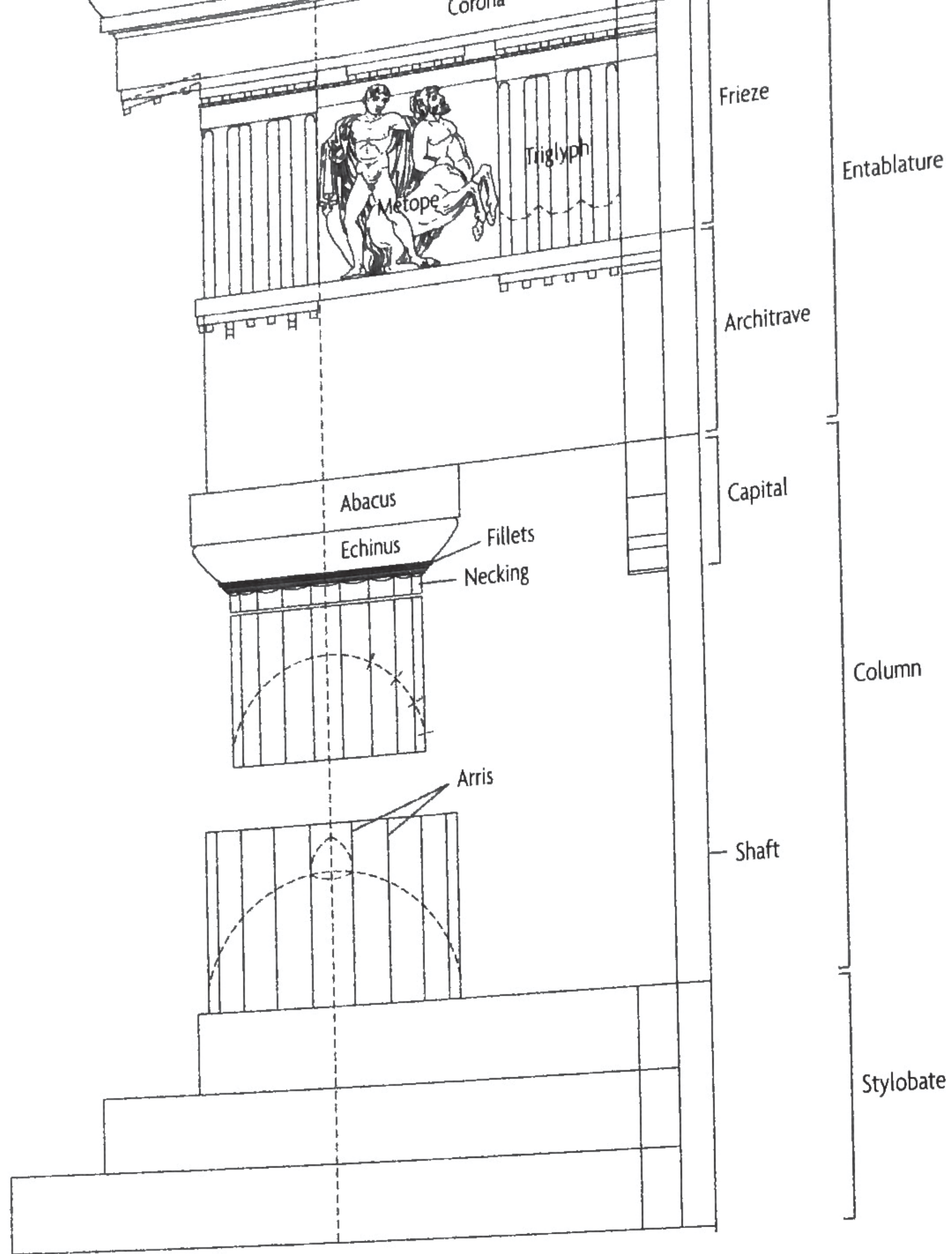
2.17 Plan of the Temple of Apollo Epicurius, Bassai, ca. 430 BCE.

All three of the Greek orders were used here. Doric columns formed the external colonnade; Ionic columns were partially attached to the cella wall; and a single Corinthian column was placed on the central longitudinal axis. Light shone on the cult statue from an opening in the east wall.

Deir-el-Bahari. The arrangement at the Temple of Hera includes two **in antis columns**, or columns in the plane of the front and rear walls and between **antae**, or wall thickenings, at the front and rear, and peripteral columns. The Greeks also developed a highly stylized treatment for bases, capitals, and the supported members, the **entablature**. In the sixteenth century CE these assemblies were termed the **orders** of architecture, the term by which we know them today, and became the basis for the **classical language of architecture**. Vitruvius, the Roman architect whose first-century BCE treatise was based in part on earlier now-lost Greek texts, names three such orders: the Doric, the sturdiest, was based on the proportions of a man (Fig. 2.16); the **Ionic** was lighter in character to reflect the proportions of a woman; and the **Corinthian**, slenderest of all, had a highly decorated capital to suggest the form and proportions of a young maiden. The Doric originated on the mainland of Greece, while the Ionic developed on the islands of the Aegean and the coast of Asia Minor. The Corinthian order only appeared later (Fig. 2.17).

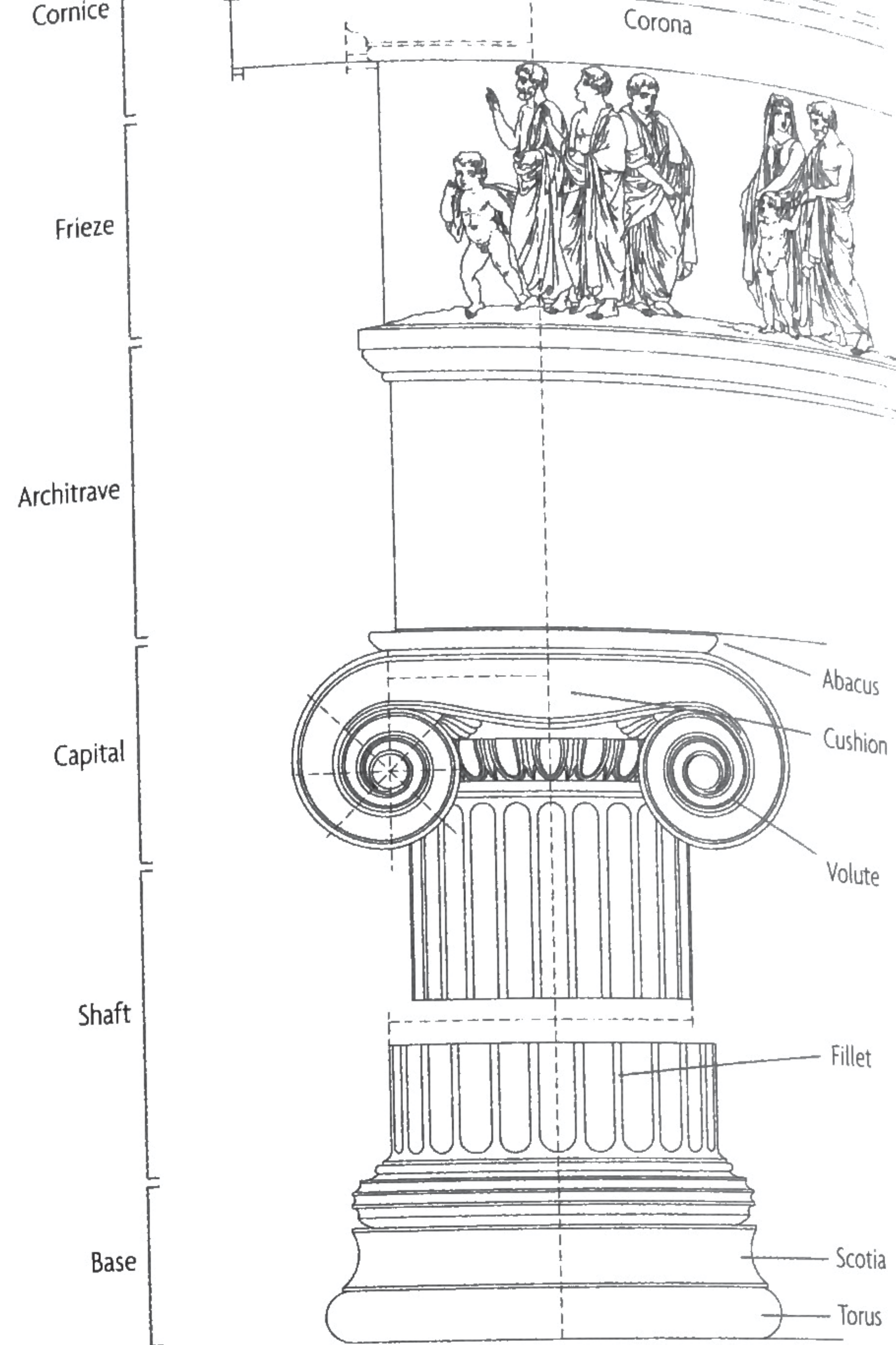
Each order has its own particular combination of elements. The Doric column has no base and has the simplest capital atop the fluted shaft; its entablature consists of a plain **architrave** and alternating **metopes** and **triglyphs** in the **frieze**, which is crowned with a **cornice** (Fig. 2.18).





2.18 The Doric order as found on the Parthenon, Athens.

The Doric's clear articulation of elements catches sunlight in an ever-changing play of shade and shadow across the carved surfaces. This may be one reason it has endured even to the present as an expressive part of Western architecture.



2.19 The Ionic order as found on the north porch of the Erechtheion, Athens.

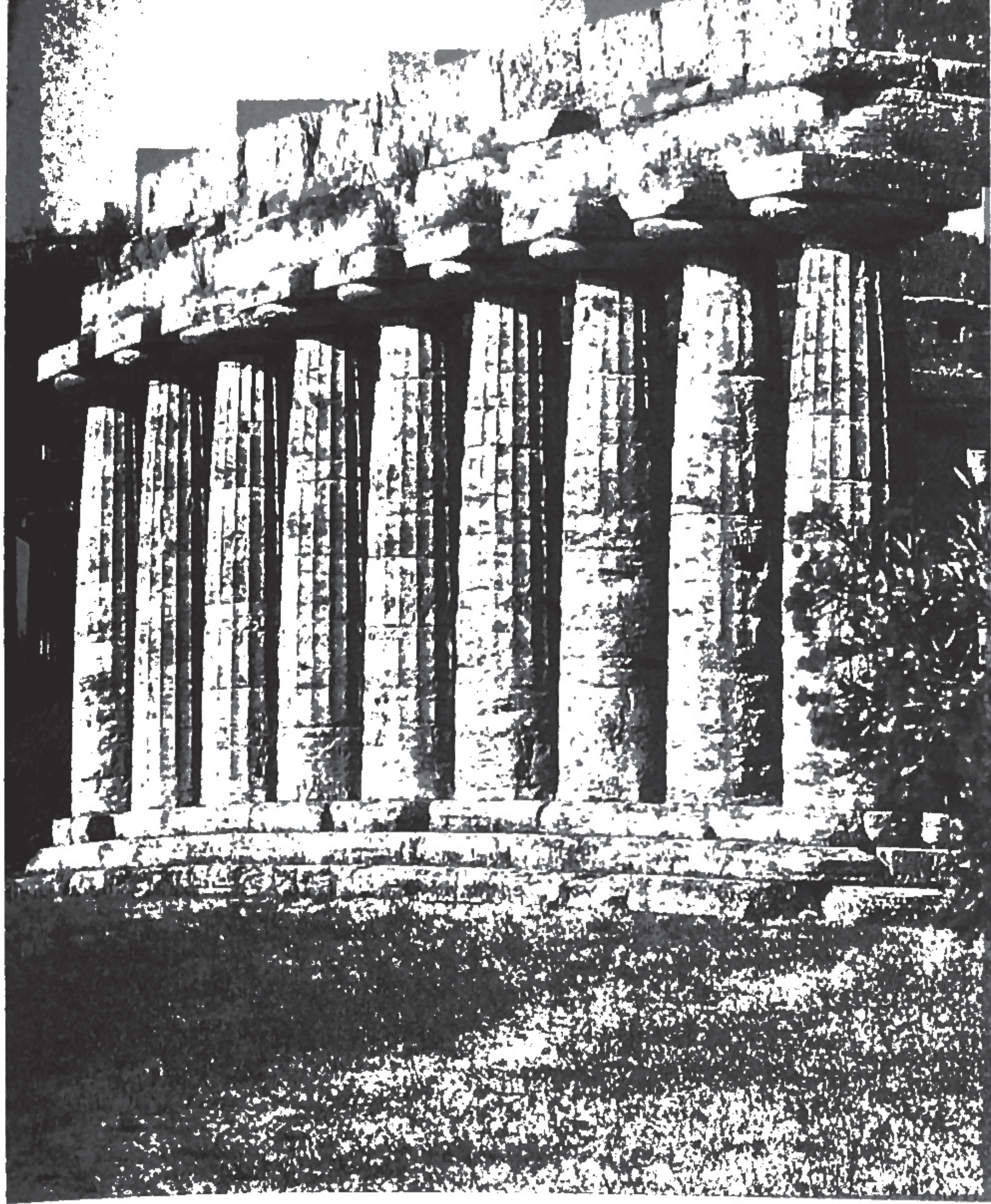
The Ionic's decorative flourishes may reflect influence from oriental sources. Although the entablature is simpler than the Doric's, its capitals and bases are subject to considerable artistic invention.

The Ionic has a base supporting its fluted column shaft and a capital with volutes (scrolls). Its entablature is also composed of an architrave and frieze. There is regional variation in the Ionic: along the coast of Asia Minor, the frieze is usually treated as three stepped bands of masonry, while on the mainland of Greece the frieze often features continuous sculpted relief (Fig. 2.19). A cornice, often with dentils, concludes the order. There were also general conventions regulating the proportions of the parts, the overall height, and the column spacing, which the ancient Greeks adjusted according to particular circumstances. Italian architects of the Renaissance 2000 years later codified the practice into a set of mathematical ratios based on the column's diameter at the base, but measurements of surviving temples provide no evidence that the Greeks ever reduced temple design to a single formula. The orders of architecture were thus at once specific and flexible, not a restriction for designers but an expressive medium that could be adapted to specific circumstances.

The origins of the architectural orders remain obscure. Vitruvius maintains that the orders were derived from

earlier architecture in wood, a material that we know was once used for temples. In Doric temples, for example, triglyphs have been seen as echoing the protective panels applied to the ends of wooden roof beams, and metopes the infill panels between them. In its stone incarnation, the wooden end grain of the beams was stylized into vertical grooves, and the blank metope panel became a place for sculpture. Recent scholarship questions this derivation, proposing instead that the orders developed from a monumental decorative style using molded terracotta details, with no particular reference to structural features in wood. Even after the walls and columns were built in stone, wooden beams continued to be used for framing the roof, but these have not survived.

Builders of the early Doric temples made use of locally available material, most often limestone. This imposed structural limitations on the length of spans for lintels and the diameter of columns needed to support the heavy tile roof. Ionic temples used marble, a superior stone, and thus had a more slender profile. At Paestum in southern Italy, the Temple of Hera in the former colonial city of



2.20 Temple of Hera at Paestum, ca. 550 BCE.

The end elevation consists of nine sturdy columns with entasis, capitals with flattened echinus profiles, and substantial abacus blocks, all supporting an entablature. Notice how shadows cast by fluting on the column shafts enhance the sense of volume.

Poseidonia is one of the most substantial of surviving Archaic temples (Fig. 2.20). Built in about 550 BCE, it has sturdy Doric columns. The column shafts swell, then diminish, as they rise to the bulbous **echinus** molding that forms the capital. This change in column diameter is called **entasis**, and it was thought to be comparable to the muscular strength of an arm or leg, expressing visually the physical load sustained by the shaft. Each flute in the column has a precise edge, an **arris**, where the curved sections of adjacent flutes intersect, and these arrises run absolutely straight up the shaft on every column. Above the echinus is a flat square block, the abacus, which provides the transition from the cylindrical form of the column to the rectangular and linear architrave above. The logic of the Doric order is that alternate triglyphs are placed above columns, with metopes in between. This works well except at corners, where the established rhythm would make two half-metopes intersect. To avoid this problem, the final complete metope before the corner is generally elongated to allow the end triglyphs from both sides to meet at the corner. Columns near the corners may also be placed closer together—look at the rhythm of the frieze to see if this is the case. Joints between limestone blocks are easily seen at Paestum, and the limited spanning capability of the stone is reflected in the close column spacing. On the interior, the central span across the sanctuary required additional support, so a line of columns extends through the middle of the cella. This corresponds on the exterior to the nine columns across the

short side of the temple, one of few times the Greeks would plan a temple with an odd number of columns on the entrance end. An even number places the central intercolumnar space at the central longitudinal entrance axis.

GREECE: THE CLASSICAL PERIOD

During the Archaic period, the Persian Empire flourished in Mesopotamia, and Persian forces under Darius and Xerxes attacked Greek cities, both on the peninsula and around the Mediterranean. Ionian cities of Asia Minor had been under Persian domination from the middle of the sixth century. They revolted and were reconquered, and Darius attempted an invasion of the mainland, where his army was defeated in 490 BCE by the combined legions of Greek city-states at the battle of Marathon. In 480 the Persians attacked again, devastating the region around Athens and sacking the city itself, but the Greek navy scored a decisive victory over the Persian fleet near Salamis. In 479 the Persians were defeated on land and at sea, effectively ending the invasion threat to the peninsula.

A period of relative peace followed, and Athens emerged as the leading city on the mainland. To prevent further incursions by the Persians, it united with Ionian cities to form the Delian League. By 454 the League's treasury had been transferred from Delos to Athens, and a considerable portion of the money was controversially spent on rebuilding the ravaged Athenian Acropolis, which had been a military, political, and religious sanctuary since Mycenaean times (Figs. 2.21–2.23). The four buildings erected there after 479 ushered in the mature phase of Greek architecture known as the Classical period (479–323 BCE).

THE PARTHENON, ATHENS

Largest and most famous of these temples was the Parthenon (448–432 BCE), dedicated to Athena Polias, patron goddess of the city (Fig. 2.24). An earlier temple, known as the Older Parthenon, had been begun in the general euphoria that followed the victory at Marathon in 490, but was still incomplete when the Persians destroyed it in 480. The new, peripteral temple, designed by the architects Iktinos and Kallikrates and built of the finest marble from Mount Pentelikos (Pentelic marble), was erected on the same site, with enlargements, and probably made use of column **drums** and metopes carved for the older temple. It is a Doric temple, eight columns wide by seventeen deep, but it incorporates Ionic attributes, including slender column proportions, a continuous frieze around the exterior of the cella wall, and actual use of the Ionic order in the western opisthodomos (back room) that housed the Delian League treasury, where four Ionic columns support the roof. The use of eight columns across the **gable** end, unusual in the Doric, has connec-

through a screen of columns.

The Propylaea eventually sees the Parthenon at an angle and the six laminae along the longitudinal axis of Fig. 5.55 show a viewer moving along the temple in situ at the right in this figure. In the right-hand side of the extreme left temple, while the temple of Athena Nike stands to the west of the Propylaea, the Erechtheion is dominant in the modern city part of the Acropolis.

The Parthenon temple sits on the highest ground and sits on the site below of the Acropolis, Athens.

ca. 470 BCE

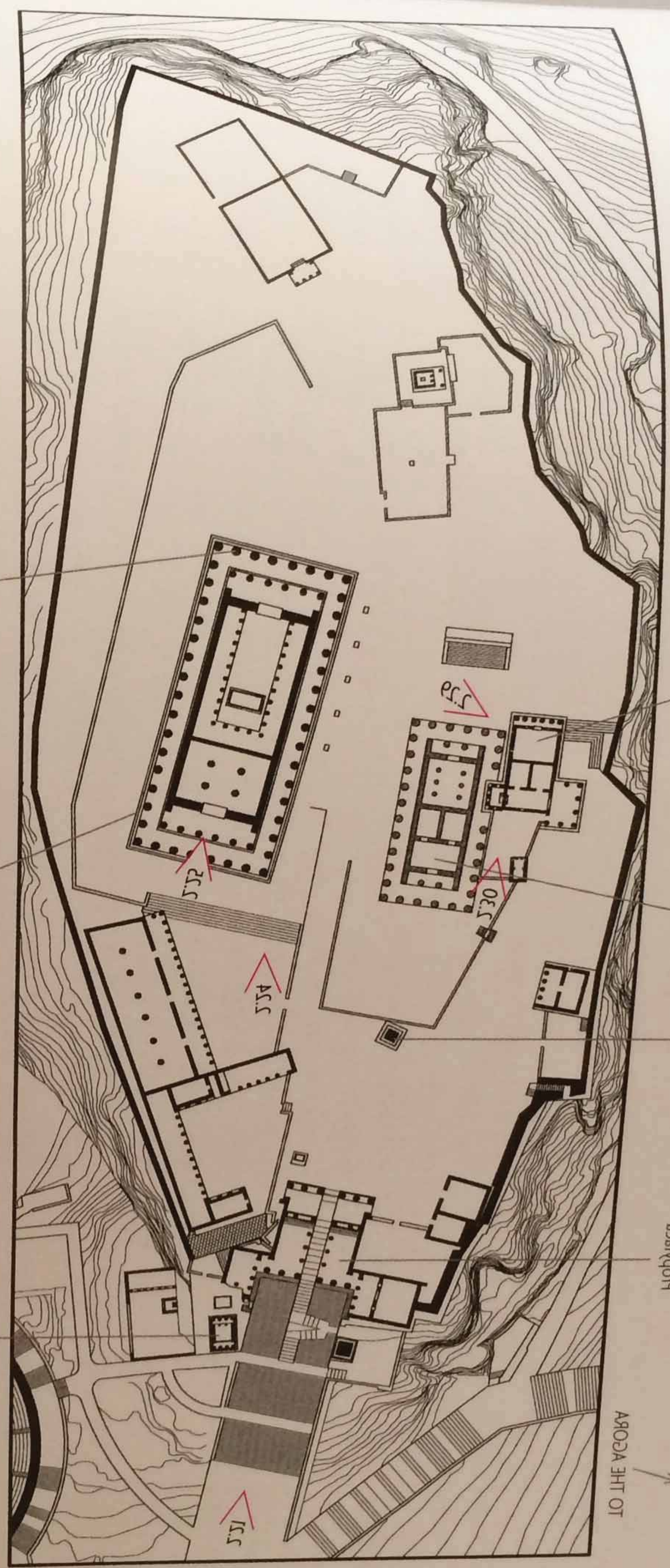
View from below of the Acropolis, Athens.

ca. 470 BCE

remains of the destruction of the Persian War. Carved marble sculptures on these foundations, in a destroyed manner. The Erechtheion porch, with the foundations of an earlier temple to Athena Polias that was the shaded temple plan in the center represents the

ca. 470 BCE

ca. 470 BCE



TO THE ACROPS

Propylaea

Old Temple of Athena Polias

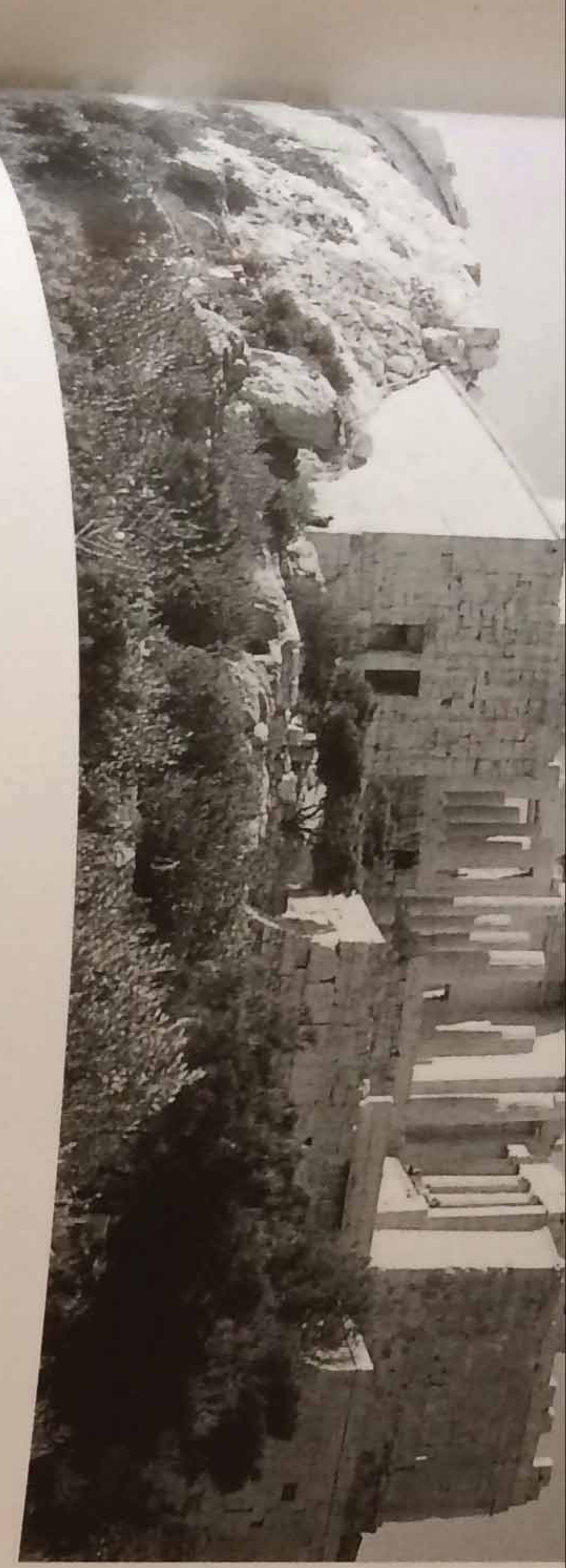
Erechtheion

ca. 470 BCE

with the angle and of the Parthenon visible on the right. The Temple Nike in the center stand out in the foreground. The remains of the Propylaea to the left and the temple

ca. 470 BCE

The Acropolis, Athens, ca. 470 BCE, from the southeast



tions to earlier Ionic temples (Fig. 2.25). Behind them at each end stand six **prostyle** columns, or columns in front of the east and west walls. Entasis, which was rather heavy-handed in the Temple of Hera at Paestum, was used subtly here to create a sense of repose. Minute adjustments in the horizontal and vertical lines of the structure enhance the perception of orthogonal geometry: the **stylobate** (the platform from which the columns rise) is actually convex upward; the columns incline imperceptibly away from the viewer; and the central axes of the columns are not vertical but lie along radii emanating from a point over 6800 feet above the ground. The columns are not the same diameter—the end ones are larger—nor are they equidistantly spaced: the corner ones are closer together. The architects made these slight variations in the column spacing and other details to avoid strict geometrical perfection and so to breathe life into their stone composition.

Sculpted figures adorned both the outside and the inside of the Parthenon. The two end **pediments** were filled with over-lifesize figures representing, on the east, the birth of Athena witnessed by the gods, and on the west, the contest between Athena and Poseidon for control of Athens. The metopes contained relief sculptures depicting struggles between Greeks and Amazons, Greeks and Trojans, gods and giants, and Lapiths (the people of Thes-salonia) and centaurs (creatures combining the upper torsos of men with the bodies of horses), all commemorating the triumph of Greek civilization over barbarism.

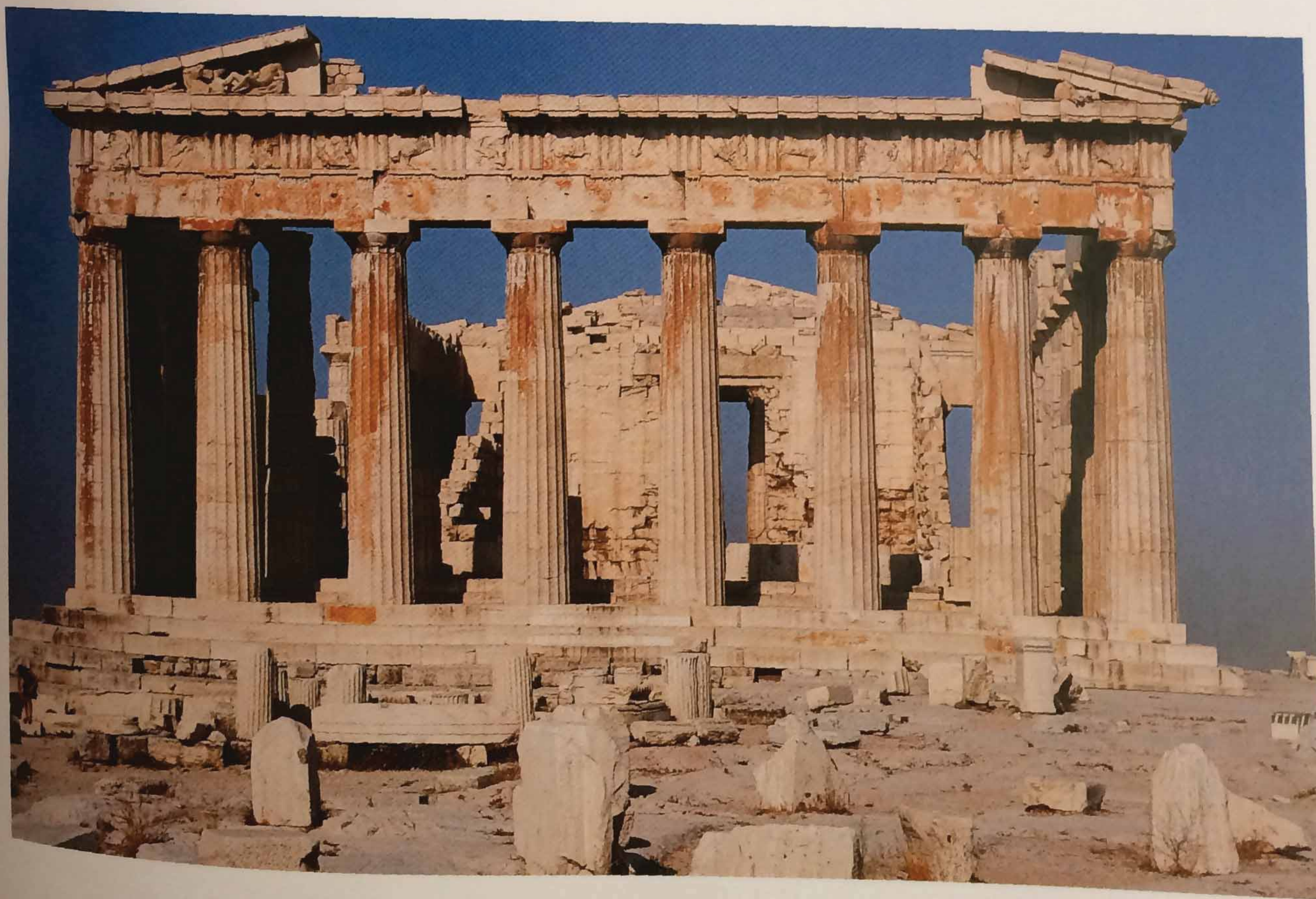


2.24 The Parthenon, Athens, 448–432 BCE.

This is how the Parthenon appears to someone leaving the Propylaea and looking southeast. As is the case with many Greek temples, the building is set so that the viewer looks up to it and sees two sides at once.

2.25 The Parthenon, Athens, 448–432 BCE, seen from the west.

The Doric order used here is elongated to an almost Ionic slenderness. Not all optical refinements are readily discernible, but note the widening of the central intercolumniation relative to the slightly closer spacing of the end columns.



A continuous frieze ran around the outside of the cella walls behind the colonnade, portraying a sacred procession of Athenians bringing gifts to Athena, possibly as a thank offering for victory over the Persians or as a representation of the Panathenaic Festival held every four years. The procession shown on the frieze begins at the southwest corner and moves in both directions to meet again in the center of the east side, where Athena and other enthroned gods receive the offerings.

The sculptor Phidias served as artistic coordinator for the rebuilding of all monuments on the Acropolis, and he was responsible for the sculptural detail on the Parthenon, including the large cult statue of Athena housed in the cella. The latter was portrayed standing, with a Nike (goddess of victory) in her right hand and a shield resting at her left. The statue had a wooden armature finished with highly valued materials. Ivory was used for all exposed parts of Athena's body; her drapery, armor, and helmet were represented in gold; and precious stones were used for her eyes and for decorating her robes and armor.

The cella of the Parthenon was one of the largest interiors built in Classical Greece. It was intended to provide a proper setting for the enormous cult statue, which was the grandest of its time. Scholars differ as to whether the cella was completely roofed, as spanning the forty-foot width between the internal colonnades posed constructional challenges. Some speculate that the cella was open to the sky. A normally relatively dark interior would have been an appropriate location for the dramatic image of Athena, for the Parthenon was oriented so that the sun would penetrate the cella interior on the morning of Athena's birthday to shine on the great chryselephantine (gold and ivory) statue.

Time and circumstance have not been kind to the Parthenon. The statue of Athena had been broken up by the second century CE, probably for the value of its materials, and various adaptive reuses of the temple did little to preserve its best features. It became a Christian church, and then a mosque after the Turks occupied Greece. By 1687 it was being used for munitions storage, at which time it was bombarded by the Venetians. A direct hit caused an explosion that ripped out the cella wall and dislodged many sculptures. The victorious Venetians carried some off as trophies. Lord Elgin, the British ambassador to the Turkish Ottoman Empire from 1799 to 1803, negotiated for the remaining sculptures, which he had removed from the temple and shipped to England; his son later sold them to the British government. Known as the Elgin Marbles, they are now housed in London's British Museum, but the Greek government is eager to have them returned to a new building that has been constructed for them in Athens. Industrial air pollution from the Greek capital is now the biggest threat to the surviving bits of the Parthenon. A major restoration project on the Acropolis took place as part of the preparations for the 2004 Olympics in Athens.

OTHER BUILDINGS ON THE ACROPOLIS

The remaining buildings on the Athenian Acropolis are disposed in a manner that at first seems almost random yet is actually carefully planned to respond to particular qualities of the site. The Acropolis is a plateau rising abruptly above the plain of the city. From the earliest times, the route of the Panathenaic Way from the civic and commercial center (the Agora) to the Acropolis traversed a

2.26 Plans of the Propylaea (437 BCE) and Temple of Athena Nike (ca. 425 BCE), Athens.

The Propylaea defined the entrance to the Acropolis, while the small Temple of Athena Nike stood on the forward projection, visible at an angle to those entering the Acropolis. See Fig. 2.22 for a reconstruction view of this ensemble. Evolved from earlier fortified gateways, the Propylaea had become an architectural device for marking the transition from profane to sacred space and for controlling views toward the Erechtheion and Parthenon.

