The sacred and profane symbolism of space in classical Greek architecture: the temple complex of Apollo at Delphi and the Athenian Acropolis

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Under consideration are the temple layouts at Delphi and the Athenian Acropolis which were shaped in completely different ways. What they have in common, however, is that both represent an architecture on two hierarchic levels: the upper or sacred level as symbolised by the eternal principle expressed in both elevated Doric temples, which are placed in dramatic juxtaposition with features in their natural settings (earth, horizon, sky); and the lower, human level which is represented by the auxiliary buildings of the approach areas of these temple complexes. The latter buildings are smaller than the main temples and are marked by complexity and ambiguity in that they are imperfect, of varied design and not oriented to a geometric axis, which is in complete contrast to the serenity of the fully articulated superior Doric order exemplified by the Temple of Apollo at Delphi and the Parthenon on the Athenian Acropolis. In both cases the focus will be on the perceptual totality of the group designs.
Key words: Classical Greek architecture, the temple complex of Apollo at Delphi, Athenian Acropolis, dialectic of sacred and profane, perceptual totality

Die heilige en profane simboliek van ruimte in klassieke Griekse argitektuur:
die tempelkompleks van Apollo by Delphi en die Atheense Akropolis
Die bespreking handel oor die tempeluitleg by Delphi en die Atheense Akropolis wat op verskillende maniere gevorm is. Wat hulle egter gemeen het, is dat albei argitektonies twee hiërargiese vlakke verteenwoordig: die boonste of heilige vlak, versimboliseer deur die ewige beginsel uitgedruk in beide verhewe Doriese tempels wat in dramatiese jukstaposisie met aspekte van hulle natuurlike omgewing (aarde, horison, lug) geplaas is; en die laer menslike vlak wat verteenwoordig word deur die bykomende geboue van die toegangspad tot hierdie tempelkomplekse. Laasgenoemde geboue is kleiner as die hooftempels en word gekenmerk deur kompleksiteit en dubbelsinnigheid wat daarin herkenbaar is dat hulle nie-volmaak ontwerp is, rusteloos en gevarieerd voorkom en nie ten opsigte van 'n geometriese aslyn georiënteer is nie, wat geheel en al verskil van die sereniteit van die volledig geartikuleerde superieure Doriese orde wat deur die Tempel van Apollo by Delphi en die Parthenon op die Atheense Akropolis verteenwoordig word. In albei gevalle sal daar gefokus word op die perseptuale totaliteit van die groepontwerpe.

Sleutelwoorde: Klassieke Griekse argitektuur, die templekompleks van Apollo by Delphi, Atheense Akropolis, dialektiek van die heilige en profane, perseptuele totaliteit

Greek sacred architecture of the classical period follows a flexible, but distinct pattern. Generally, the temple is on an elevated site, approached by a fixed route, the sacred or ceremonial way. The sacred way and temenos areas at Delphi and the Athenian Acropolis are prime examples. The former was shaped architecturally by a process of accretion along the sacred way,[1] while the Temple of Apollo, destroyed by fire in 548 BCE, rebuilt as from 514 BCE, was destroyed by an earthquake in 373 BCE. At Athens the Panathenaic procession followed a route from the Dipylon Gate, through the Agora to the Acropolis. The buildings on the Acropolis, dating back to the period 447 to 405 BCE, and at Delphi are the subject of this research. In both cases the focus will be on the perceptual totality of their group designs.

It is proposed that Classical Greek architecture is not exclusively an architecture of three classical orders, but an architecture on two hierarchical levels, namely the architecture of the divine level, as symbolised by the fully articulated, eternal Doric temple which is aligned with elements of the earth, the horizon, and the sky as dramatic natural backdrop, as opposed to the architecture of the secondary human level as embodied in the auxiliary buildings along sacred ways or approach areas and in temple complexes that are generally smaller than the main temple and characterised by complexity[2] and ambiguity,[3] that is, tending to be imperfect, restless, of varied design and not oriented to a geometrical axis, forming a contrast with the architecture of the superior Doric order, embodied in temples such as the Temple of Apollo at Delphi and

the Parthenon on the Athenian Acropolis. Thus, Classical Greek architecture embodies both a symmetrical and a random, complementary order, setting up a dialectic between order and disorder, the sacred and the profane.

Delphi

The layout of the central part of the sacred precinct at Delphi[4] comprises the isolated Temple of Apollo and the winding sacred way and its environs, lined with various treasuries, small buildings, structural elements and sculpture (collectively called the "approach area" or simply the "approach"). The architectural treatment of the temple (figures 1 and 2) is completely different from that of the approach.
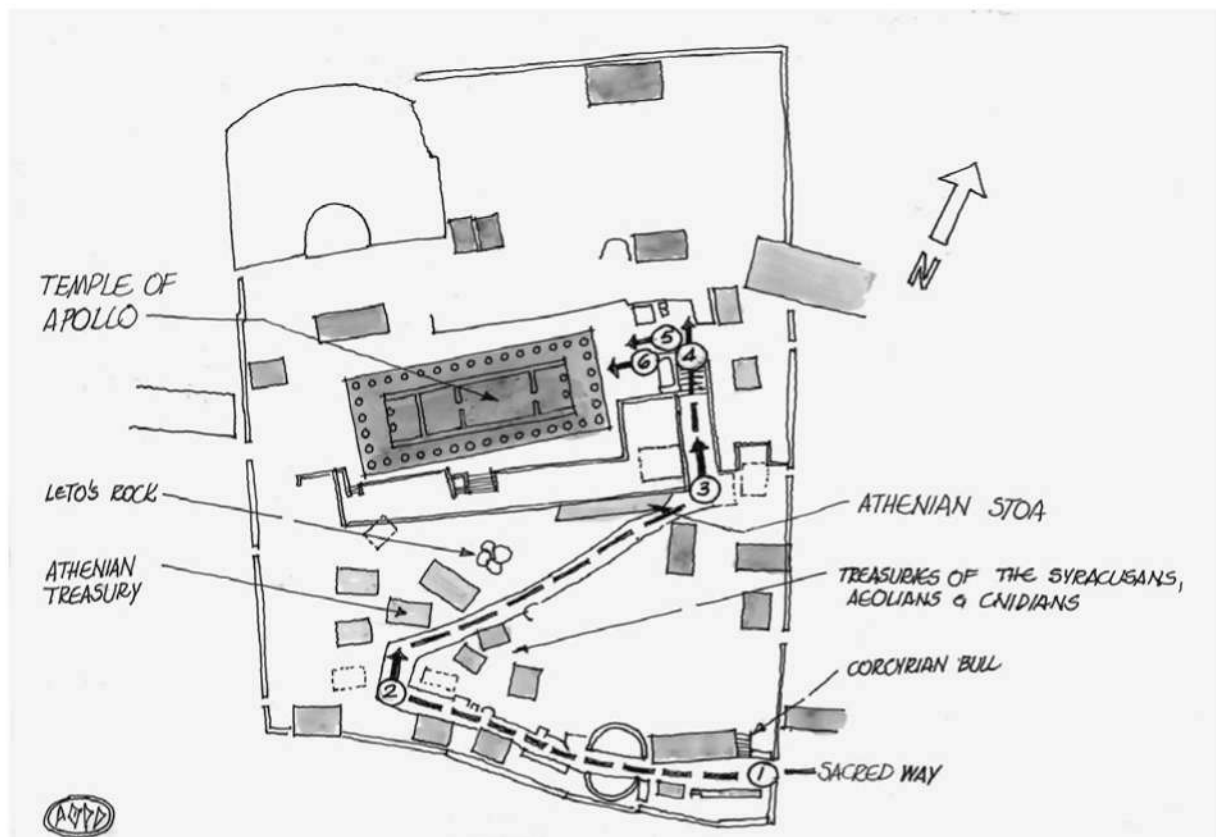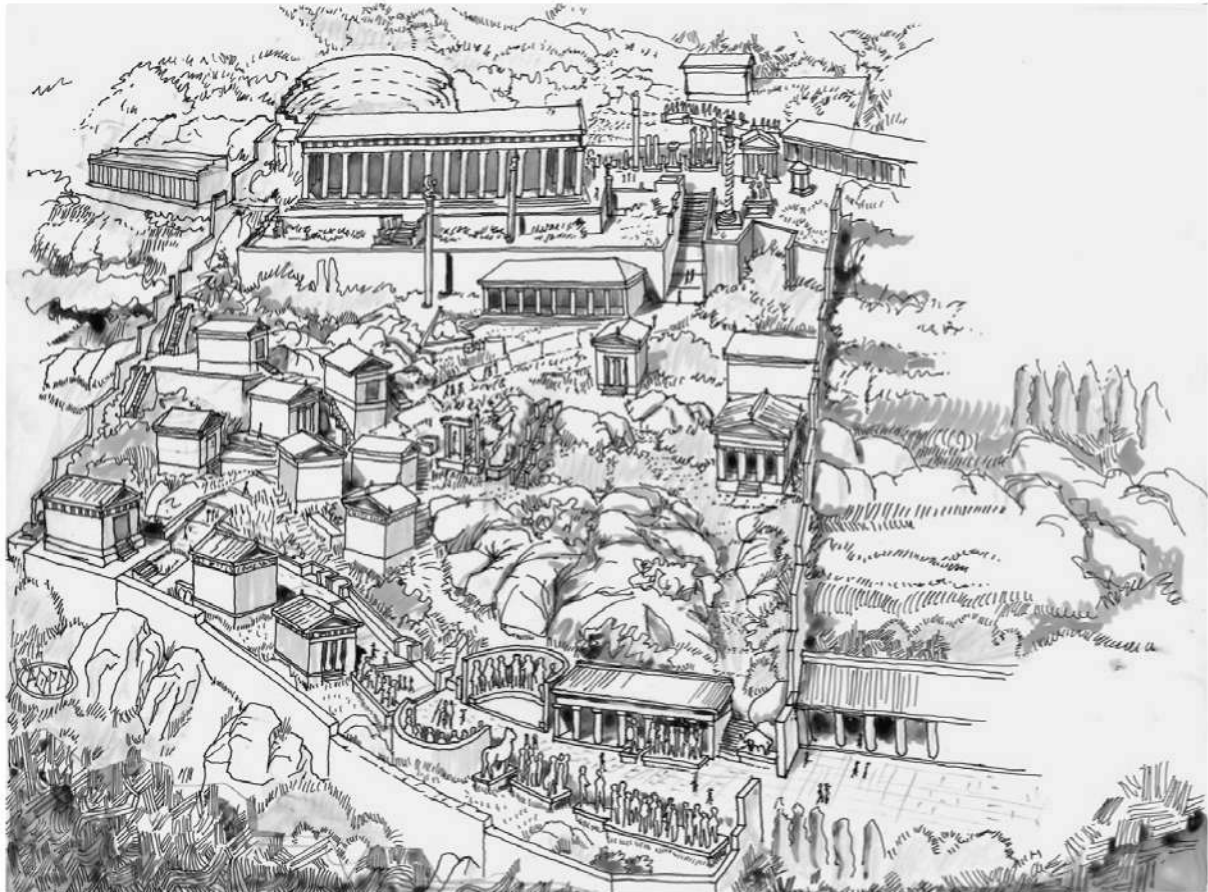

Figure 1
Plan of the temple complex of Apollo at Delphi as it was approximately 300 BCE. This area was continually changing, with old structures being superceded by new structures.

Worshippers at the entrance to the sacred way would have been able to partially view the Temple of Apollo's south facade, but from that distance and at that lower level its scale would not have been perceived as accurately and completely as up close, from the terraces on which it is raised.

The layout of the sacred way is complex. It changes direction four times, with longer and shorter stretches running in five directions,[5] but generally following the contours of the sloped site of the approach. The directional changes of what seems to have started as a goat track affords the approaching participant changing views of the main features of the landscape, such as the Pleitos Torrent Gorge, the foothills of Parnassus, and the elevated temple.

A pilgrim visiting Delphi in the fifth century BCE would enter the sacred precinct at the southeast. Traversing the sacred way he or she would pass by small *thêsauroi,* or treasure-

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houses, constructed by the Siphnians, the Sikyonians and the Megarians, before arriving at a crossroads where, turning a sharp bend, he or she would get a first view of the Temple of Apollo, placed high on a terrace over the sacred way[6] It is not axially linked to the approach buildings,[7] but the flow of the last short stretch of the sacred way is directed to the main facade of the temple. Its longitudinal axis runs through its cella which the participant may not enter. He or she follows a route from the altar, around the temple so that their previously partial views of the temple give way to a full view, from ground to roof line, on all sides. There is no emphasis on the entrance of the peripteral temple. The sculptural temple structure relates to the landscape and the sky as the forces of nature representing the god to whom the precinct is dedicated, rather than to human beings or their works.

Figure 2
A general view of the temple complex at Delphi from the south.
The Temple of Apollo dominates the whole temenos because of its size and commanding position.

Rex Martienssen made an interesting observation, that the approach structures prepare the participant for the climactic view of the temple placed at the end of the sacred way[8] He notes that many elements of the temple are separate and scattered amongst several incomplete structures in the approach area where, for example, porticoes become peristyles. By contrast the temple is an integrated totality of architectural parts and units, articulated by a fully developed order. Collectively, Martienssen considers the approach structures as a substitute propylon, serving the same function as an elaborate entrance building, as a means of securing a sense of adjustment and preparation for the "spectator". In providing a visual introduction to the climactic event for the benefit of the spectator he writes:

> Such a long sustained approach cannot do otherwise than induce in the spectator a mounting sense of
> climax, and it is in the arrangement at Delphi that one sees a parallel to the construction of the Greek
> tragedy. Both in architecture and drama [when] the end is in sight, the spectator is familiar with all

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the elements that go to make up the particular unity to which they subscribe. He cannot influence the outcome of the plot in the one case, nor can he modify the arrangement in the other — but in each he is subject to a form of compulsion that renders the end more vital and more moving than if the "suspense" had been built up of elements of which he had no previous knowledge.[9]

Clearly the temple is a complete building, fully articulated in plan and peristyle; both gable ends are sculpturally complete, and elements of the Doric order form an integrated whole. Unlike most approach buildings, the temple is free-standing on a level base and stepped terraces, elevating it so that it can be viewed from all sides, and exhibiting every facet of its complete Doric articulation.

According to Christian Norberg-Schulz, one who builds "gathers" the meanings already present in nature: by building in response to the natural characteristics of a site he [or she] echoes them in architecture and so lends prominence to the natural qualities of the landscape.[10] Vincent Scully finds this ideal expressed in Greek sacred architecture, which "explores and praises the character of a God or a group of gods in a specific place. That place is itself holy and, before the Temple was built upon it, embodied the whole of the deity as a recognized natural force."[11]

Indeed, there is a most impressive contrast at Delphi between the smooth surfaces of the buildings and the roughness of the mountain rock. With the mighty Holy Parnassos behind them, the human scale of the approach buildings, in particular, is asserted in their architectural design, hence, Gutkind's reference to the "massif of Holy Parnassos towering above the Sacred Enclosure, forcefully reminding man of his insignificance and the human scale of even his most sacred works".[12]   Contrasts between natural features and architectural constructions abound. A typical example is the dialectic between a few steps on the sloping site and an obstructing rocky outcrop. Similarly, at certain places the participant's progress up the hill on a well trodden pathway was interrupted or obstructed by scattered natural rocks (figure 3), left respectfully intact — perhaps even celebrated as uniquely part of the totality of the sacred place.
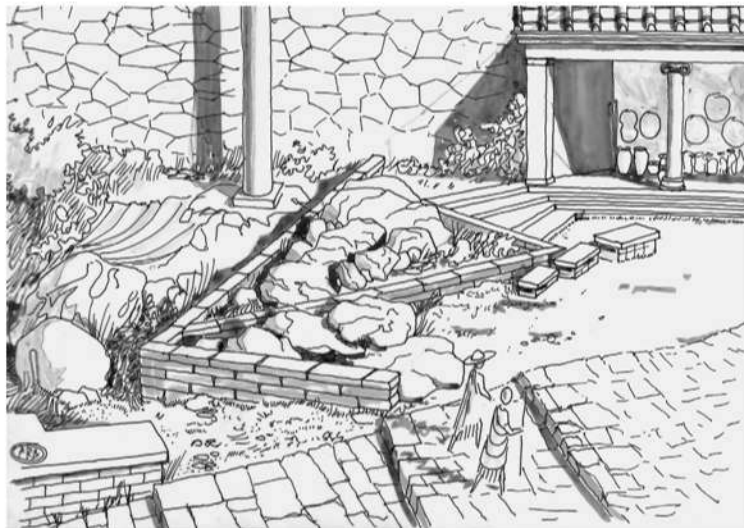
Figure 3
Leto's rock at Delphi. This arrangement shows a dialectic between
built and natural structures. Both are fully articulated without
physically intruding on each other, even if the visual effect is jarring.

Likewise, there is a dialectic between the constructed features themselves, especially in the approach area (figure 4) where each building and architectural element has its own axis and orientation, its completeness in itself, its self-importance or own independent existential

meaning, again respectfully permitted, left intact and celebrated. Paradoxically, apart from being evenly matched in scale, it seems that the creation of a harmonious interaction between these structures was either avoided or left unresolved.

In the approach area there is a dialectic between the sacred way, the buildings and the earth, creating the irregular rhythm of many participating elements. The dialectic of the temple is with the sky, the mountain and the horizon. In totality there is a dialectic between the entire *temenos,* arranged by the builders, and the natural mountainous site.

The temple stands out because it is built on a levelled terrace forming a platform on higher ground than the approach. As a Doric temple it has a strong geometric rationale, the product of rational design and structural principles, continually refined by perception and intuition. It represents the climax of the absolute, of architecture representing the divine level, while the approach represents the relative level of humankind.

Figure 4
The Treasuries of the Syracusans, Aeolians and Cnidians at Delphi.
This detailed composition shows a dialectic between the built structures in the approach area.

The temple is clearly visible as a distinct element, set partly against the sky and partly against the landscape. The temple platform is situated where nature lends itself to modification, and the pattern of modification along the approach ends with a demonstration of human beings' ability to impose on nature the presence of a building which embodied the rational and spiritual qualities of Apollo.

From its elevated position the temple rises complete and commanding, dominating the sacred precinct. Seen against the backdrop of land and sky it gathers and celebrates the full significance of Apollo's presence, and expresses the divine order in Doric sign-language (figure 5).

The fact that the temple is only partially visible from the entrance to the approach area creates a visual expectation of the destination of the pilgrimage. Along the ceremonial way its

visuality is likewise constantly restricted, affording the participant only partial glimpses of his or her destination. Simultaneously, the participant's impressions of the sacred elements of the landscape change as he or she progresses towards the temple, which remains "tantalizingly incomplete".[13] The main facade becomes a visually complete experience only on reaching the altar which was placed opposite, or in front of the eastern, that is, the main facade.

The Athenian Acropolis

The Acropolis site did not suggest a chaotic, restless layout, as in the case of Delphi's sacred way (figures 6 and 7). Amongst the secondary buildings on the Acropolis are temples which could not all be built on the scale of treasuries. Therefore the designers consciously employed different architectural techniques to juxtapose the divine order of the main temple with the imperfect, human order of the auxiliary buildings.

Figure 5
From the last stretch of the approach the Temple of Apollo is in full view. It is a fully articulated Doric structure and a comprehensive synthesis of fragmented elements of the treasuries along the approach. Its overall symmetry is in stark contrast with the rugged mountain backdrop.

According to Scully, Mnesikles, the architect of the Propylaea, placed its entrance on "the long axis from Salamis to Hymettos" (figure 8).[14] This axis is within three degrees of being parallel to the axis of the Parthenon and the long axis of the Acropolis. Thus it is aligned to the total architectural ensemble on the Acropolis, and demarcates the threshold that the ceremonial Panathenaic procession had to cross to pass from profane to sacred space.

In the group design of the buildings on the Athenian Acropolis there is a dialectic of symmetry and asymmetry — perfection and imperfection. Imperfection resides in the auxiliary buildings in which compositional elements are left unresolved. These buildings, notably the Propylaea and the Erechtheum, are incomplete in the sense that they are not symmetrical structures and are not fully articulated according to the rules of a classical order. This is considered to be intentional rather than simply an omission on the part of the architect, as will be explained.
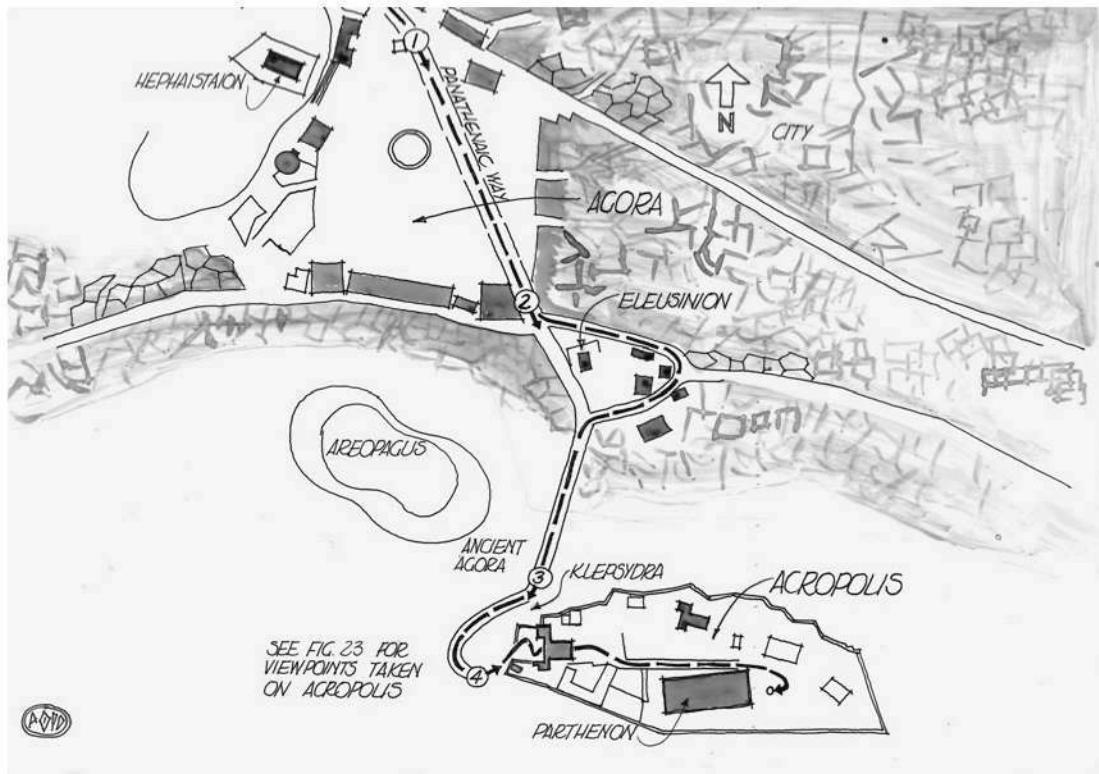
Figure 6
Plan of Athens at the end of the fifth century BCE. At the lower left is the Agora, cut across by
the Panathenaic Way cuts and then rises toward the Acropolis, loops around the Eleusinion,
crosses the site of the superceded ancient Agora (founded by Theseus), passes the hill of
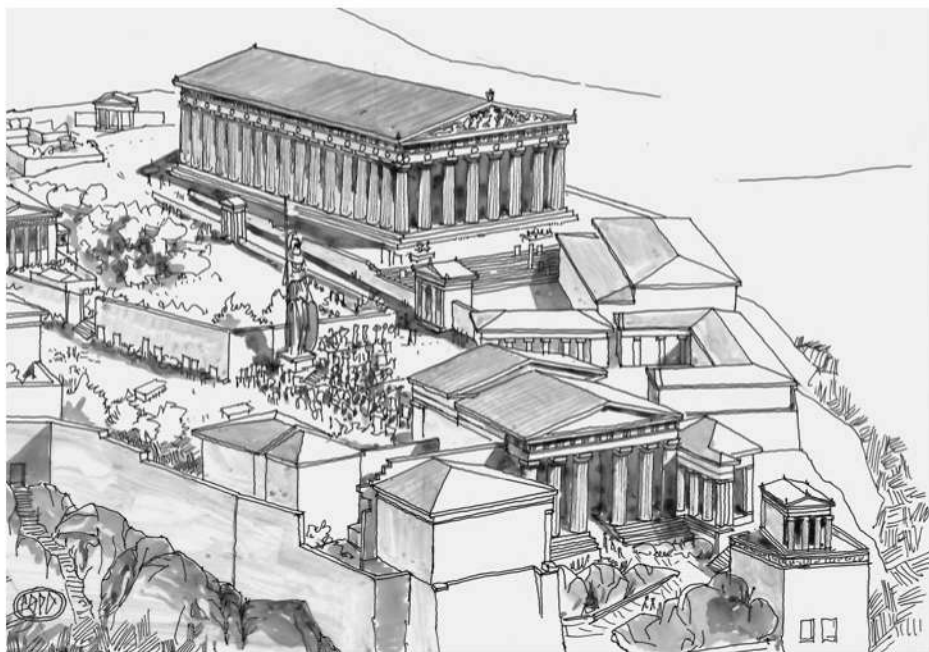Areopagus, enters the Acropolis and leads to the east facade of the Parthenon.

Figure 7
The Acropolis from the northwest. The Parthenon's west facade is seen here.
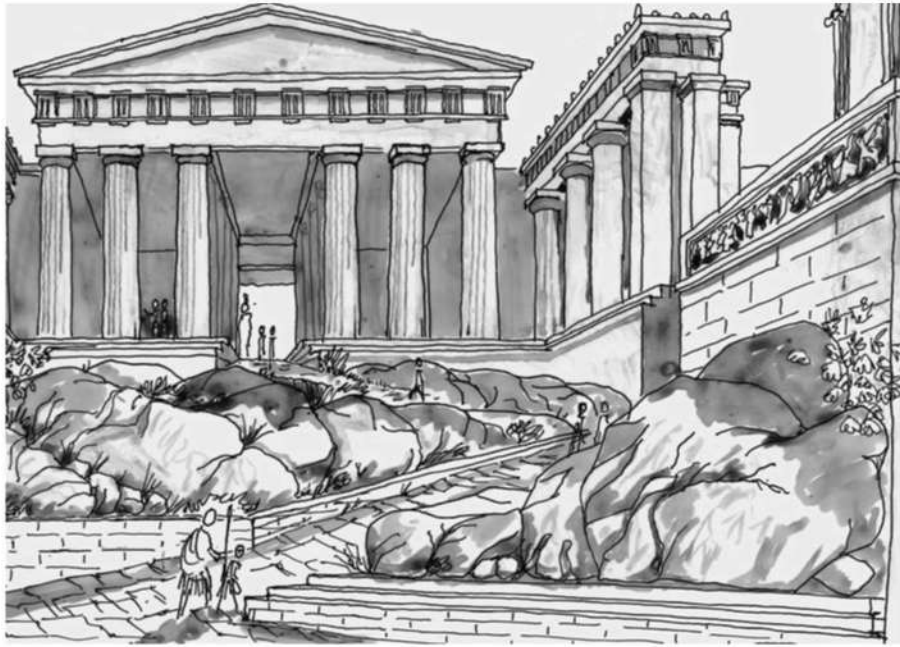The approach terminates at the east facade.

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Figure 8
At the entrance to the Acropolis the Propylaea appears as a prelude to the Parthenon,
but is incomplete, subtly irregular and fragmented with a powerful mixture of symmetry
and asymmetry. It forms a forecourt for participants, but also bestows a significance
on the beginnings of the rocky Acropolis floor and the ancient access ramp, giving rise
to a dialectic incorporating natural features and constructed elements.

Work on the Propylaea was started in 437 BCE and was halted in 432 BCE by the outbreak
of the Peloponnesian War. Construction was later resumed, though not completed. This building,
placed in the western approach, was probably not be fully built as planned. The south wing,
opposite the Pinakotheke is perforce small, owing to difficulties in building on a site flanking
the outcrop of rock on which the Temple of Athena Nike is placed.[15] However, the assumption
that two symmetrical wings, of more impressive dimensions than the Pinakotheke, remained
unbuilt on the eastern side is conjectural. Similarly it is conjecture that the open colonnade, to
be substituted for a west wall in the wing opposite the Pinakotheke to allow free access to the
bastion and Temple of Athena Nike (figure 9), designed by Mnesikles, was never built.[16]

It is conjectural that side-wings of the Pinakotheke were intended to be spacious picture
galleries (the so-called Pinakotheke), but that this building was left unfinished,[18] resulting in
an asymmetrical exterior, explained by Fausto Franco as Mnesikles' solution to the problem
of better illumination of the interio.[19] In response to various attempts, such as that by Franco,
to explain its asymmetrical design, William Dinsmoor argues that, by taking some alternative
decisions in the execution of the design and construction, Mnesikles could "have created a
totally symmetrical scheme...".[20] However, Mnesikles clearly did not take these decisions.

It is worth noting that the functional aspect of the Pinakotheke has also attracted the
attention of many scholars, one of whom, Pontus Hellström, "imagines" the Periclean Propylaea
"which were never built according to the plans [of Mnesikles], as a giant banqueting complex"
with eastern halls which, if executed, would have afforded a more or less complete symmetry
between the northern and southern parts and would have given the gateway a more monumental
elevation.

Figure 9
The Temple of Athena Nike on the Athenian Acropolis is an exquisitely small, jewel-like
building that is obliquely oriented to the axis of the Parthenon on a cramped locality.

After a debate lasting more than a century among scholars who contended that the Mnesiklean Propylaea were originally planned on a more monumental scale than that of its execution and with a more or less complete symmetry between the northern and southern parts, no convincing explanation of the architect's intention has been proposed.

No solution is offered either for the fact that the Ionic order in the central, covered porch and the exterior Doric columns are complete in themselves, but both can be said to be incomplete in the resolution of the building as a whole owing to the combination of the orders.

We, however, propose that Mnesikles purposely designed a a-symmetrical building, blemished in many details, to avoid detracting from the perfection of the Parthenon as the iconic building on the Acropolis.

We define "blemishing" is an inclusive type of imperfection, comprising incompleteness of architectural articulation (not in the sense that some buildings were not executed according to the architect's plans), fragmentation and irregularities, especially the lack of symmetry — if these are intentional. Blemishing here is therefore considered to be a purposeful design technique applied by the architects of the auxiliary buildings on the Acropolis, while fragmentation is an element of this technique. By means of blemishing a building's presence and form are made consciously amorphous, thus affecting its overall imageability,[17] and transgressing the rules of architectural typology, which emphasises its place in the hierarchical group order and ensures that it does not rival the complete articulation of the main temple.

The design strategy evident in the Erechtheum (figure 10), also designed by Mnesikles, is as contentious as that of the Propylaea. This secondary temple on the Acropolis is completely asymmetrical with its component parts on various levels and its interior spaces functionally unrelated. The irregularities of the site and the remains of a previous temple may have prompted the architect to fragment the structure in a seemingly arbitrary way[21] The Ionic order is used on two of the three porches, which sets it aside as distinctly different from the main temple. Not being peripteral it is also distinctly different from the main temple, and the columns on the

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north porch are arranged according to the prostyle scheme, four in front and two set back, while the prostyle porch on the east side extends across the full width of the building. Caryatids are used on the third (south) porch. They endorse the feminine character of the Erechtheum, but structurally they are a negation of the clarity of the Greek system of trabeation. The present writers consider the use of caryatids as a lapse of taste and a structural blemish, because visually these figures are an unacceptable expression of load-bearing members. They are structural, as well as sculptural hybrids. Greek sculpture was either free-standing or in the form of reliefs on buildings, while the caryatids are free-standing, except for the load on their heads, which turns them into structural elements and creates a sense of ambiguity. This evidence verifies the conclusion that this building has been fragmented by design.

Figure 10
The Erechtheum on the Athenian Acropolis is well proportioned and exquisitely detailed,
but fragmented and purposely blemished to the extent that it gives the impression
of having been cut up and re-assembled incorrectly.

On the other hand, the Erechtheum is the work of a genius if judged in context, as Bruce Allsopp maintains:

> About the quality of the Erechtheum as architecture, I venture to disagree with the eminent authority who called it "an unsatisfactory building". I prefer to see it from the point of putting a building alongside the Parthenon, which was still only 10 years old. To have designed a mini-Parthenon in the Doric order would have been trite indeed, and I suggest that this juxtaposition of the small, exquisite, asymmetrical, highly-ornamented Ionic shrine to the ponderous, dignified mass of the Parthenon is one of the most successful relationships of two buildings which has ever been achieved. Furthermore, there is nothing final about the Erechtheum. Despite the extreme refinement of its detail it is a mutation, the beginning of a new architecture capable of all the variations which Hellenistic, Roman, Medieval and Renaissance architects were able to invent.[22]

Amongst others, these are two conflicting views, or rather, approaches to understanding for what seems to be an otherwise inexplicable deviation from an architectural tradition which hitherto had produced a satisfactory classical style of architecture. Firstly, Robertson avers that religious interference caused this minor disaster, and the architect consoled himself with

"elaborated ornament". On the other hand, Allsop proposes that the architect's purpose was to avoid "triteness" since his building was meant to be in juxtaposition with the "ponderous mass" of the Parthenon. However, the present authors are in disagreement with these opinions. The central thesis stated here is applicable to both the Propylaea and the Erechtheum.

The building has been made asymmetrical. It has a symmetrical centre but this has been hemmed in by (or seemingly extends into) wings that branch into different tristyle-in-antis porches and end facades. The south wing is actually only a facade with its western anta transformed into a free-standing column, an ensemble which nevertheless creates "the illusion of perfect symmetry".[23] The north facade is bulky and blank with a hip roof, while the south facade is a colonnaded end, but shallow, like a stage prop seen at an angle. Such a consciously applied design strategy based on the dynamic balance of volumes or intentional asymmetry has never been used in mainland Greek architecture, but was applied in the case of the Propylaea as a way of "spoiling" the building, a practice referred to as "blemishing" in the present article.

On the Erechtheum there is the caryatid porch, which is tacked onto the south facade for no apparent reason. It has been placed asymmetrically as if there is some elaborate meaning behind the decision to do so. According to our hypothesis the intention of this asymmetrical composition is to break up the idea of a complete building and heighten viewers' awareness of the fragmentation of structural parts. Even the use of the caryatids is a type of fragmentation; it is as if these sculptures ended up in the wrong position and are performing the wrong function of structural support, contrary to what one would expect of free-standing figures around which space flows and into whose presence visitors may enter. However, once again their sculptural elegance and idealisation of the female figure hide their role in adding to the blemishing of the Erechtheum.

Concerning the ambiguity and complexity expressed in the relationship between the approach buildings and the Doric temple in the two temple complexes, as well as the totality of the architectural schemes at Delphi and Athens it can be said that the approaches are characterised by the use of various architectural orders which vary in scale and deviations from the classical ideal of symmetry. Furthermore, the orders are incomplete and fragmented in the secondary buildings. This is achieved by means of irregular proportions combined with inconsistencies in internal and external design. By contrast, the main temple is a single, normative building on a monumental scale, meticulously completed and refined. The ambiguities in the approach may be justifiably interpreted as purposeful disorderliness, the secondary buildings acting as a foil to the symmetry and order of the main temple which is geometricised to the point of abstraction.[24] These techniques emphasise the differences between the buildings on the two identified hierarchical levels, according to our hypothesis. However, a complete and integrated experience of these two distinct parts is achieved through a synthesis of chaos and cosmos. The main temple on its own would certainly offer a spectator an aesthetic experience, but not the visual fulfilment of an extended experience of serial vision experienced by a participant who arrives at a destination that has been elusive until the moment of arrival;[25] on the other hand the approach by itself would be meaningless. Everything that has come before can only be understood in terms of the final vision of the Doric temple and, conversely, comparable to a narrative the climactic full view of the temple's main facade would have less impact without the preceding "events" along the sacred way.

What Mnesikles seems to have done is to take the Delphi experience or an unidentified architectural parallel and recreate it in a compact form on the Acropolis. He took the fragments of buildings and building details, distilled and remaining in memory after having walked the length of the approach at (say) Delphi and assembled them into large and powerful collages

when he had the opportunity in Athens. He succeeded in transferring the Delphi experience, which stretches over a longer distance in space and time, to the Acropolis, where the dimensions of time and space do not assume the same proportions, but with an equally strong effect. The architect's control of highly individual and original forms and design strategies applied to the Propylaea and the Erechtheum are masterly and create gripping visual contrasts. The Propylaea is, one may say, a cold sculptural form, making the smaller, obliquely placed and sensuously ornamented Erechtheum seem rich and alive by contrast. The Parthenon, as seen by the participant almost immediately after coming onto the Acropolis, seems austerely beautiful. It has the effect on the participant who moves toward the altar, measuring his or her human scale against its columns, of being monumental and powerful but also offering a sense of physical and mental security (figure 11). More powerfully, it represents a spiritual shelter and a memorial to the dead of the battle of Marathon.[26] There could be no doubt that this temple — which in a sense embodies a history of former Doric temples — is the first-order building on the Acropolis. There can also be no doubt that it is classical culture's best monument (figure 12).
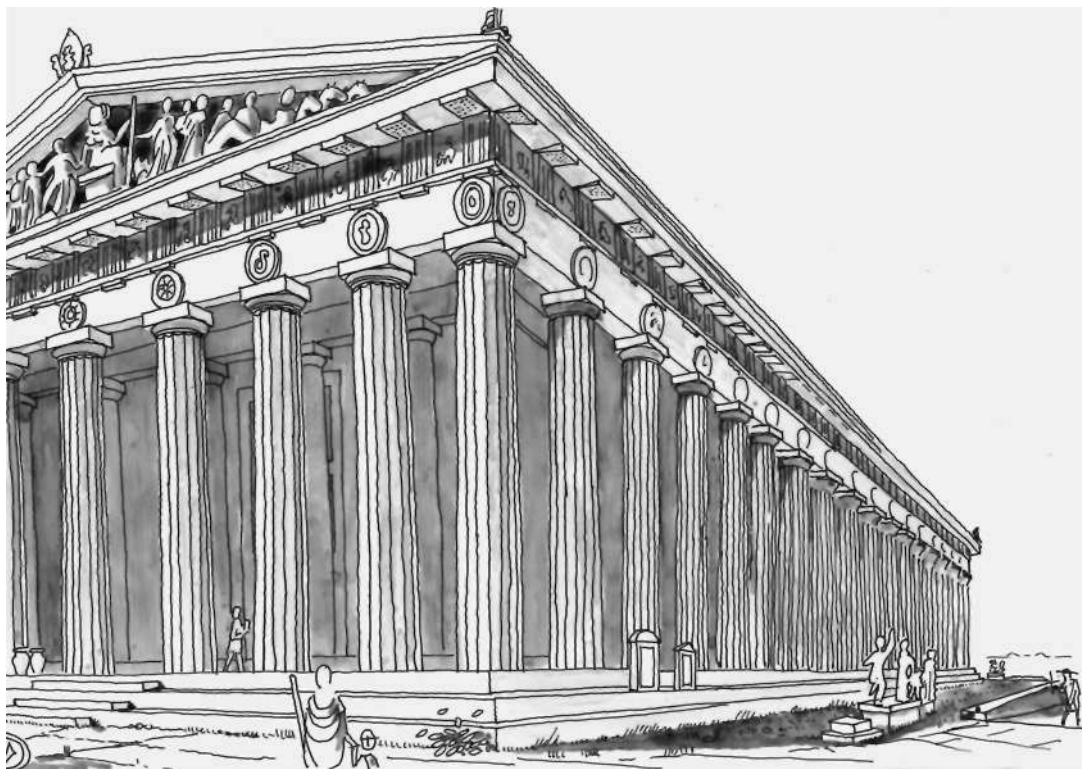

Figure 11
The temple axis is directed towards mountains, valleys and the sea stretching to the distant island of Salamis, while a backward glance on turning the corner embraces the full extent of the north side and main facade of the Parthenon. Two-thirds of its height is a curtain of columns, while the tympanum which is decorated by divine figures gives it significance at another level of perception by hinting that the teeming disorder of humanity has been left behind.

The approach area, or Panathenaic way, belongs to the "real" world with all its problems, trivia, imperfections and restlessness. It is less part of the Acropolis temple complex and more part of the wide world away from it. The Propylaea does, however, "announce" the participant's access to the Parthenon as the main temple so that it is, after all, an intermediate structure between the profane and the most sacred. However, meaning at Delphi and the Athenian Acropolis accrues retroactively: it is the end which endows the preceding imperfect structures with meaning, and conversely, the structures that precede the Doric temple building fulfill the expectation of a climactic end.
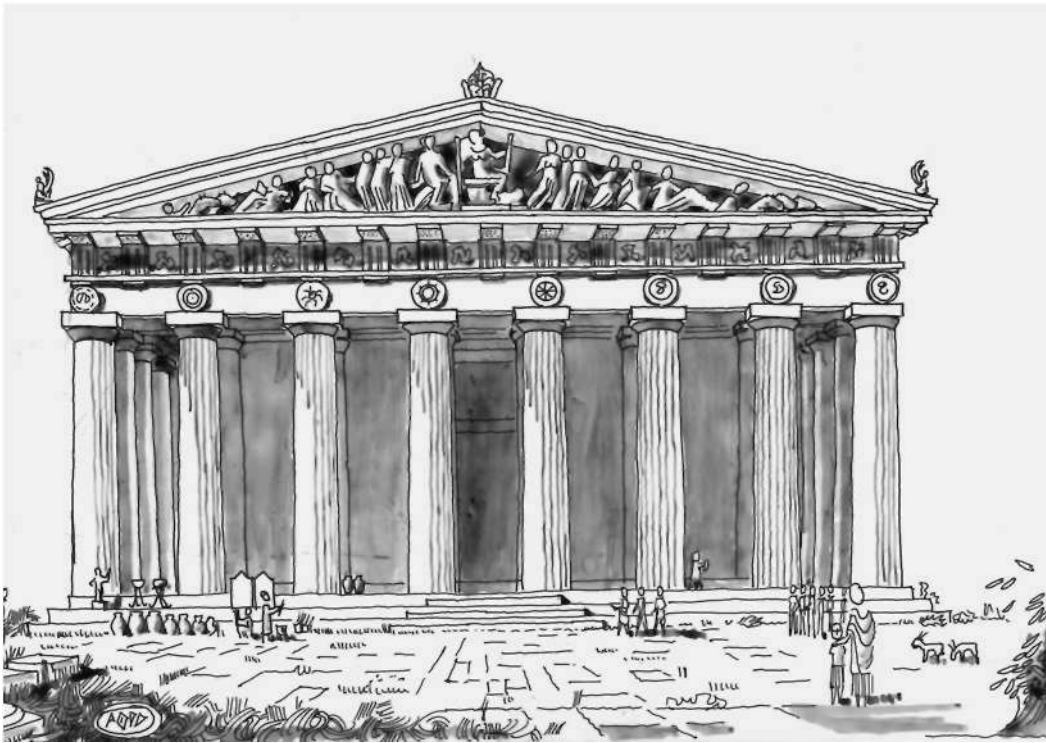
Figure 12
The expectation created on the way to the Parthenon is fulfilled by the main temple's absolute formality, symmetry, consciously refined proportions, and articulation of parts, expressing an empathetic aesthetic that is universal and eternal. It is unmistakably the end of the journey.

Conclusion

Greek sacred architecture was meant to blend with the topography of the site, as exemplified at Delphi, as well as the total landscape, as exemplified by the Athenian Acropolis. Furthermore, the Greeks had a general fear of offending the gods and avoided all competition with them (having regard to the myth of Athena and Arachne, among others); therefore the human order had to remain secondary to that of the deities. The Doric temple, as at Delphi and on the Athenian Acropolis, induced contemplation of the meaning of the earth, the sky, human beings and the gods, since its physical presence is linked with all of these. Even though the Parthenon also symbolises the greatness of Periklean Athens, the centre of an empire on land and sea, the gods are given a specific concrete presence by means of its pediment sculptures, as in the case of the Temple of Apollo. Especially the depiction of the actions of Poseidon and the victorious Athena on the west pediment of the Parthenon enhances the climactic viewing of the complete temple by means of the "explosive force of these divine apparitions", as JJ Pollitt so aptly describes the scene.[27]

Notes

1   Rex Martienssen (1960: 130) gives the following detailed information about the length of the sacred way:
"The main entry to the temenos lies at the south-east corner, and from this point the "sacred way" runs almost due west for about 300 ft, it then turns and for about 275 ft runs north-north-east. The final stage — about 100 ft — carries one north-west to the front of the temple."

2 and 3 The terms "complexity" and "ambiguity" have acquired special significance in late modern theories of urban design, a design discipline which deals with the relationships and spaces between buildings. The application of these terms in architecture is attributable to Robert Venturi who introduced them in his postmodernist handbook, a manifest bearing the title, *Complexity and Contradiction in*

Architecture.

Rapoport and Hawkes (1970: 108)describe complexity *"as a desirable quality for the urban environment"* (authors' emphasis) and define complexity as the relations among elements (ie. buildings in a compositional context), that greatly influence the viewer's perception of the built environment (see note 1 above on serial vision): "It follows that the greater the differences among elements, the greater the complexity of the set, suggesting that complexity and variety are closely related. Variety depends on noticeable differences, and the number of such differences gives some measure of variety."

Complexity nevertheless is not random but requires some form of pattern. According to Rapoport and Kantor (1967: 218): "Without the pattern we have chaos; without the variety, monotony. Both together give excitement, anticipation, drama, discovery, complexity, all terms descriptive of a high perceptual rate."

4   The walled-in temenos area also includes the theater, which is not taken into consideration in this research.

5   EA Gutkind (1969: 553) describes the ascent to the Temple of Apollo as follows: "[The] way zigzags up the hill and in a characteristic Greek fashion reaches the *temenos* almost casually without any direct relation to the great temple. There is no axial orientation, no attempt at symmetrical perspective."

6   Richard Stillwell (1954: 5) describes a visitor's visual experience at the temenos of the Temple of Apollo at Delphi in terms that clearly imply serial vision, but which he does not mention as such. One may guess that his description and terminology were inspired by Martienssen's research, but this is uncertain since there are no references to his sources in the article. In essence Stillwell is correct about the viewing of the Temple of Apollo, but he offers only a description, instead of an interpretation of the design of the temenos: "At the sanctuary of Apollo [...] the entrance is placed at the southeast corner where the temple, rising high on its terrace, is seen at an oblique angle. As one labours under the hot sun up the Sacred Way the temple disappears behind one or another of the many small treasuries which line the approach, only to show again at a bend of the road and once more be cut off by the terrace on which it stood. It is not until the last turn [...], that the entire building, now at close range, appears. Here the view is almost head on and the ramp that leads to the entrance lies before us. But we may admit that the peculiar nature of the site made anything in the way of planning, save for purely practical considerations, a virtual impossibility."

7   Rapoport and Hawkes (1970: 09) deduced from tested examples of architectural settings that "the greater the number of turns in the viewing field the greater the amount of significant information available. Sharp turns are more noticeable and more of a departure from expectations, so they provide more useable information and greater complexity than a series of gentle curves."

Martienssen (1956: 130-31) argues: "[D]espite the fact that there is no propylaea the avenue of small repeated buildings implies a sense of preliminary enclosure before the focal point of the sanctuary is reached."

9   Martienssen (1956: 133).

10   Norberg-Schulz(1980: 17).

11   Scully (1962: 109).

12   Gutkind (1969: 553).

13   This term is used by Allan Temko (1952: 165-66)with reference to Notre-Dame, Paris, before Violet Le Duc and Baron Haussmann isolated it: "The facade of Notre-Dame expresses a collective ideal — an ideal which in the thirteenth century was felt and appreciated by the people as a whole; and which was more of less comprehended, in its grand lines, by the total population. Yet by paradox, as long as the Middle Ages lasted — or rather, as long as the medieval environment endured — no man saw the facade as did his neighbour; nor did either of them see it, as it may be seen today, in entirety. Because of the nature of the medieval city, each could only see portions of the wall, which were tantalizingly incomplete and which changed continually as the individual changed his position, compelling him to add the parts to form a total image in his mind." Referring to Temko's description of viewers' perception of Notre-Dame as "tantalizingly incomplete", Rapoport and Kantor (1967: 218) designates this experience as the essence of "ambiguity". (See notes 2-3 above.)

14   Scully (1962: 182).

15   For a complete analysis of the ploblems Mnesicles encountered with planning and construction of the Propylaea and the Temple of Athena Nike, see Bundgaard (1957).

16   See Robertson (1943: 120).

17   Kevin Lynch (1960: 9-10) defines "imageability" as "that quality in a physical object which gives it a high   probability of evoking a strong image in any given observer. It is that shape, color, or arrangement which facilitates the making of vividly identified, powerfully structured, highly useful mental images of the environment. It might also be called *legibility,* or perhaps *visibility* in a heightened sense, where objects are not only able to be seen, but are presented sharply and intensely to the senses." (Author's emphasis.)

18   Robertson (1943: 120 and 122) sums up the unfinished aspects of the Propylaea's south-west wing:
"[T]his wing was seriously curtailed, though the portion executed approximately balances the north-west wing: some details seem intended to remind the spectator of the architect's disappointment. It is clear that there were also planned two larger halls flanking the eastern porch. The south wall of the north-eastern hall and the north wall of the south-eastern hall would have been formed by the north and south walls of the central building, while a great part of their west walls would have been formed by the east walls of the north-west and south-west wings. An open row of Doric columns would perhaps have given free access to each of these halls from the Acropolis... ."

19   See Franco (1930-1931: 10).

20   Dinsmoor's (1982: 32-33) speculation about the fact that the Pinakotheke could have been symmetrical reveals some regret that it is not: "One wonders how Mnesikles' choice of priority of the jointing system over a symmetrical system of openings was regarded in his time. One also wonders if the thought ever crossed his mind to abandon the relationship of openings to frieze, which no longer worked for the door anyway, and to return to a balanced system. He could have maintained his final jointing system up to the lintel course. If, above this, he had changed the order of the joints in the top three courses, if he had moved his door 1 D.F. to the west instead of 3/4 D.F. to the east, and if he had shifted both his windows to the west, he could have created a totally symmetrical scheme, not only of all the openings to each other but also of their location in the over-all length of wall."

21   Bundgaard (1957: 66) maintains that the way in which Mnesicles focused his attention not the whole, but the separate units of the Propylaea "is an attitude we do not expect to find in any architect". However, the same attitude is recognisable in the Erechtheum, most probably also designed by Mnesicles.

22   Allsopp (1970: 15 and 17).

23   Marx (1993: 587).

24   Stevens (1936: 443) maintains that while "important buildings of the ancient Greeks were usually designed with the utmost simplicity", and the builders aimed at "rigid symmetry", he heaps scorn on "the manner in which their ensembles were designed". This opinion clearly misses the point that the Greeks understood the necessity of a dialectic between the rigid symmetry of the main temples and the approach buildings at Delphi and the Athenian Acropolis.

25   The purpose of a pilgrimage to a Greek temple may not have ended at the main facade. While the purpose of most visits may have been to offer sacrifices at the exterior altar, visits to Delphi may also have been for the purpose of consulting the oracle in the interior. At most temples sightseeing was allowed, for example of the 160 metres long frieze, set high in the exterior colonnade of the Parthenon. Visitors were also allowed to enter the temples at certain times to bring homage to the cult figure of the god or goddess in the cella.
See Corbett (1970).

26   The Parthenon may rightly be called a memorial to the dead of the battle of Marathon because the same number of warriors who fell in combat are depicted in the metope panels.

27   Pollitt (2000: 222).

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