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The perceptual totality of group design in sacred Classical Greek architecture:

the approach and the Temple of Apollo at Delphi and the Panathenaic Way, the Propylaea and the temples on the Athenian Acropolis

Estelle Alma Maré

Reviewer's Report

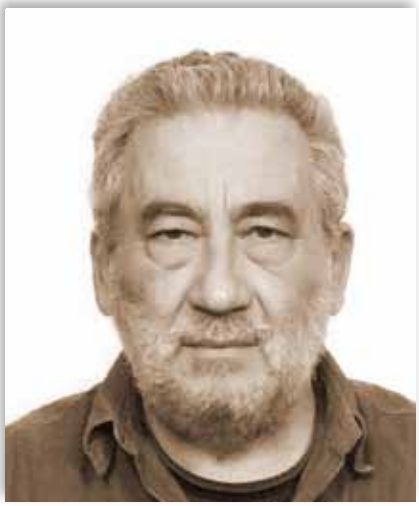
This work is a substantial and major contribution to the understanding of and interpretational efforts by present-day viewers of Classical Greek temple precincts, in particular the Temple of Apollo at Delphi and the Temples of the Athenian Acropolis. It integrates two remarkable results of observational and scholarly research, namely the admirable drawings by the late Anastasios Rapanos of the relevant temple precincts, and the magisterial exposition of the cultural contexts and the dynamics of the rituals executed there, by Estelle Alma Maré.

The many serially ordered illustrations are a visual representation of unique value, with the linguistically expressed argument running parallel in a wonderfully synthesized presentation. The voluminous literature on the topic has been studied in depth and ably compacted. The result is, however, more than just an overview of past work, but a new and original synthesis, casting a unique illumination on what is a difficult and controversial issue: the totality and integration of the disparate buildings with their different architects and dates on the precincts and what their total functioning was intended to be.

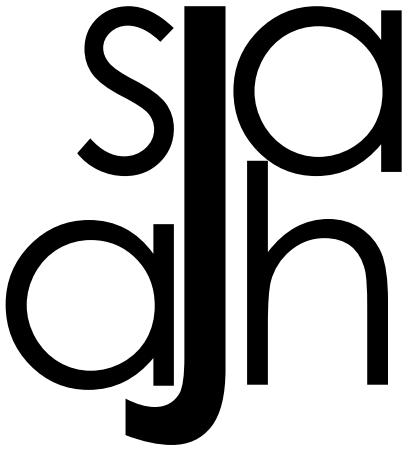
The contents and structuring of the contribution, the references, and the English language usage are of the highest standard.

With complete confidence I can recommend the publication in the Journal of this major academic contribution to our knowledge of the architecture of Classical Greece, a fresh and meticulously motivated perspective on an essential but challenging topic.

Estelle Alma Maré holds the position of extraordinary professor in the Department of Architecture, Tshwane University of Technology, Pretoria, and is the present editor of the *SAJAH*.



Antanasios Rapanos was a Pretoria based architect.



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The perceptual totality of group design in sacred Classical Greek architecture:

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Estelle Alma Maré

Department of Architecture,
Tshwane University of Technology, Pretoria
E-mail: mare_estelle@ fastmail.fm

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I dedicate this research to the late Atanasios Rapanos whose reconstruction drawings of serial movement along the approach to the Temple of Apollo at Delphi, and the Panathenaic Way and the temples on the Athenian Acropolis inspired the writing of this text.

Contents

Abstracts

It is the contention of this research to explain the perceptual totality of composed groups of Classical Greek buildings in sacred precincts, as exemplified at Delphi and the Athenian Acropolis. The main proposal to be tested by the analysis of these architectural ensembles is that sacred 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 mainly by the Doric temple, as opposed to the architecture of the secondary human level, represented by the ancillary buildings in the approach areas that are characterised by a diminished scale, complexity and ambiguity.

Key words: Classical Greek architecture, approach to the Temple of Apollo at Delphi, Delphic treasuries, Panathenaic Way, Athenian Acropolis, Parthenon, Propylaea, Temple of Athena Nikè, Erechtheum, Trophonios and Agamedes, Ichtinos and Callicrates, Mnesikles, serial movement, perceptual totality

Die perseptuele totaliteit van groepsontwerp in heilige Klassieke Griekse argitektuur: die aanloop tot die Tempel van Apollo by Delfi en die Panatenaïese Weg, die Propylaea en die tempels op die Akropolis van Athene

Die bespreking in hierdie navorsing het ten doel om te verduidelik hoe komposisies van groepe Klassieke Griekse geboue in heilige omgewings 'n perseptuele totaliteit vorm, soos by uitnemendheid by Delfi en die Akropolis van Athene. Die belangrikste proposisie wat deur die ontleding van hierdie argitektoniese groeperings getoets word, is dat heilige Klassieke Griekse argitektuur nie by uitnemendheid drie Klassieke ordes is nie, maar 'n argitektuur op twee hiërargiese vlakke, naamlik die heilige vlak wat hoofsaaklik deur die Doriese tempel gesimboliseer word, in teenstelling met die argitektuur van die sekondêre menslike vlak wat verteenwoordig word deur die bykomende geboue in die aanloopareas wat deur 'n verminderde skaal, kompleksiteit en dubbelduidenheid gekenmerk word.

Sleutelwoorde: Klassieke Griekse argitektuur, aanloop tot die Tempel van Apollo by Delfi, skatkamergeboue by Delfi, Panathenaïese Weg, Akropolis van Athene, Parthenon, Propylaea, Tempel van Athena Nikè, Erechtheum, Trophonios and Agamedes, Ichtinos en Callicrates, Mnesikles, sekwente beweging, perseptuele totaliteit

Preface

This research is based on insights into Classical Greek architecture by Rex Martienssen[1] and Vincent Scully, Jr.,[2] but also reaches beyond their premises.[3] My endeavor is to explain the experience of the worshiper as participant when following the sacred way to Temple of Apollo at Delphi, and likewise following the Panathenaic Way to the Parthenon on the Athenian Acropolis, the major sacred precincts in the repertoire of sacred Classical Greek architecture.

I obey the dictum that research should be done within self-imposed limits and justified by internal consistency. Since the scope of this research is limited, it is not intended to be a closure of the subject, but a model to be extended or altered by further research that could probably influence present-day design criteria.

Introduction

Propositions

Propositions regarding the perceptual totality of group design in sacred Classical Greek architecture, exemplified by the approach and the Temple of Apollo at Delphi, and by the Panathenaic Way, the Propylaea and the temples on the Athenian Acropolis

It is the aim of this research to demonstrate the following propositions regarding classical Greek architecture, with reference to the approach and Temple of Apollo at Delphi, and the Panathenaic Way, the Propylaea and the temples on the Athenian Acropolis:

First, that Classical Greek architecture temple precincts, exemplified by the Temple of Apollo at Delphi (designed by Trophonios and Agamedes), and the Temple of Athena Parthenos, better known as the Parthenon (designed by Iktinos under the supervision of Phidias), and other temples situated on the Athenian Acropolis, were purposely developed to form a perceptual totality. This was achieved consciously by movement along the winding ceremonial or sacred way through the approach environs to these Doric temples. This sense of spacial sequence facilitated the experience of serial vision,[1] thus heightening the participants'[2] awareness of the elevated temple, the *opus perfectum*, as the climactic destination.

Second, that sacred Classical Greek architecture, comprising a composed group of buildings, such as mentioned above, is not exclusively an architecture of three classical orders, but an architecture on two complementary hierarchical levels, namely the architecture of the sacred level, as symbolised mainly by the Doric temple, that is exemplary of its order, characterised by geometric symmetry, and is aligned with features of the earth, the horizon and the sky as dramatic natural backdrop, as opposed to the architecture of the secondary human level, as represented by the ancillary buildings in the approach areas that are characterised by being on a diminished scale, complexity[3] and ambiguity[4] in the sense of being imperfect, restless, of varied design and not oriented to a geometrical axis, which is in striking contrast to the architecture of the superior Doric order. Thus we find a dialectic of hierarchy and randomness.

Third, it is proposed that sacred Classical Greek architecture, forming a collective or ensemble, as represented by various structures and treasuries, together with the Temple of Apollo at Delphi, and the Propylaea and the temples on the Athenian Acropolis, establishes a dialectic between the formal geometric orderliness of the Doric temple and the randomness of complementary, but hierarchically lesser temples, structures or buildings. This dialectic also connotes a relationship of identity and difference between natural features and building components in the precincts that are in tension with one another, a tension that contributes to the complexity and richness of the group design, thus creating a dynamic and aesthetic perceptual totality.

Fourth, that while the temple complex of Apollo at Delphi developed over many generations according to the principles stated above, the architects, builders, sculptors and other craftsmen of the Athenian Acropolis, who thoroughly understood the said principles, manifested the principles of functionality and perceptually coherent group design in a matter of a few years. The Propylaea, Erechtheum and the Temple of Athena Nikè, all on the Athenian Acropolis, as well as the various small buildings along the ceremonial or sacred way of the approach at Delphi, are examples of buildings of varied design consciously made imperfect by blemishing, incompleteness in the sense of incomplete architectural articulation, fragmentation of components, and limiting of the scale, in order to contrast and thereby emphasise the perfection of the Doric temple as the main edifice in the respective precincts.

In summary, it is purported that Classical Greek sacred architecture of which the selected examples are the main manifestations, follows a flexible but recognizable pattern. The Doric temple as the main destination of pilgrims at Delphi and on the Athenian Acropolis, is situated on an elevated site, to be approached by a fixed route, the sacred way. At Delphi the architectural layout was shaped by a lengthy process of accretion along the sacred way, while the Temple of Apollo was built after 548 BCE and repaired from 372 BCE onwards.[5] At Athens the Panathenaic procession followed an established route from the Dipylon Gate, through the Agora to the Acropolis, on which the existing buildings on the Acropolis were built from *circa* 447 to *circa* 405 BCE.

Part One

The approach and the Temple of Apollo at Delphi

The approach and the Temple of Apollo at Delphi

The winding sacred way (referred to as "the way") and its environs in the sacred precinct[1] at Delphi that is lined with various treasuries, small buildings and sculpture, is collectively called the "approach" to the elevated and isolated Doric Temple of Apollo, referred to as "the temple" (figure 1). The architectural treatment of the temple, which is the dominant structure and the destination of the pilgrim, is different from all the structures in the approach area (see Part Three, figures 12-19). These differences that create a forceful perceptual dialectic are discussed under the following headings:

Scale
Orientation and axial layout
Use of orders
Dialectical relationship between blemished and fragmented buildings and the Doric temple of unified design
Architectural elements and natural features

Figure 1
The Temple of Apollo at Delphi exemplifies the complete Doric order; it is free-standing, on a monumental scale and its formal design contrasts strikingly with the rugged mountain backdrop.

Observations of the approach and the Temple of Apollo

Scale[2]

There is a discrepancy between the scale of the buildings and structures along the way and the scale of the temple. The approach buildings, cluttered on a restricted, winding area on an incline, are all more or less on the same human scale, contrasting rather modestly with that of the elevated temple. The treasuries, of which there are eleven[3], are like megara *in antis*, on a sculptural scale.[4] For example, the restored Athenian Treasury (figure 2), dating from 490-485 BCE, is 8,60 metres in length, 7,53 metres in width, and its columns are 4,15 metres high.[5] The way itself is 6,5 metres wide to accommodate both participants on foot with sacrificial animals and riders on horseback.[6]

Figure 2
The Athenian Treasury and the surrounding small structures in the approach precinct at Delphi do not have coordinated axes; each follows its own uncompromising siting, conceding only to the movement along the sacred way.

In contrast, the final temple, designed by the brothers Trophonios and Agamedes,[7] is monumental in size and prestige, as befitting a monument to the god Apollo. The total length of the stylobate is 60,30 metres, the width of the temple is 23,80 metres and the height of its columns is approximately 11 metres. It is set in a clearing on two terraces that are linked on the south-west side by stairways. It is a consciously free-standing building, and its imposing scale would have been obvious to the participant taking it in from various viewing positions along the approach. From the Great Altar of the Chians, beyond which lies the entrance to the cella, the participant could view the pedimented east side of the temple in its entirety (see figure 19). From the surrounding terrace the long sides of the temple, with fifteen columns to a side, are visible from stylobate to roof. Participants at the entrance to the way would have been able to view the temple's south facade partially, but from that distance and at that lower level its scale would not have had the visual impact as from the terraces on which it is raised.

Orientation and axial layout

The layout of the sacred or ceremonial way that leads to the temple is complex. Because of the steep incline it changes direction four times, with longer and shorter stretches running in five directions.[8] Generally it follows the contours of the sloped site of the approach, but the directional changes of what seems to have started off as a goat track, developed in a manner that affords the participant changing views of the main features of the landscape such as the Pleitos Torrent Gorge, the foothills of Parnassus, as well as of the temple.

A pilgrim visiting Delphi in the fifth century BCE would enter the sacred precinct at the southeast. Following the way, he or she would pass small *thêsauroi*, or treasure-houses, constructed by the Siphnians, the Sikyonians and the Megarians, before arriving at a crossroads where, on turning a sudden bend, getting a first view, albeit obliquely,[9] of the temple placed on a terrace above the approach.

Each of the five lengths of the way may be considered as an axis with a different radius of perception. The frequent changes of direction along the route, lengthened by turnings, create a cumulative, composite visual impact of changing views of the natural surroundings and the architectural environment of the temenos, an impact much greater than can be experienced along a straight processional axis that leads directly to the main building.[10]

The longitudinal axes of most of the buildings along the way are directed towards the way, but never form a right angle with that stretch of the way towards which they are oriented. The way is in no sense accurately aligned with the contours of the site, and the buildings are not oriented to a uniform geometrical axis. This irregular layout was most probably dictated to a large extent by the irregularities of the steep, rocky site. The foundations and platforms of the treasuries were quite likely placed on the most level areas available. Therefore the relationship between the entrances to these structures and the way is largely practical, and not conditioned by any geometrical pattern. According to Vincent Scully, the approach buildings "set off the slope by their platforms [...] can 'face', or turn flank, or push at an angle".[11] They are nevertheless broadly oriented towards the way so as also to have a perceptual and aesthetic effect on the individual walking there. In a metaphorical gesture of salute, their doorways are mostly turned towards the participants proceeding to the temple.

As they accumulated, the various approach buildings became visual barriers, blocking out the participant's views of the surrounding cliffs and the elevated temple. While these structures do not have coordinated axes and each follows its own uncompromising setting, conceding only to the movement along the way, they nevertheless directed the participants' vision along their long or short sides so that their views of the mountain and temple were intermittent and partial.

The approach broadens out to form the upper, rectangular terrace of the temple. Here the site layout clearly becomes geometrical and regular, in contrast with the random layout along the way. The temple is oriented north-east and south-west, the latter being the directions of the gabled facades.

The longitudinal axis of the temple runs through its cella, to which the flow of the last stretch of the way is directed. The participant may not enter the cella but must move from the altar around the temple. His or her previously partial views of the temple are now replaced with a full view: from ground to roof line, on all sides. There is no emphasis on the entrance of the peripteral temple and it is not related directly to any stretch of the way. No rigid axial emphasis links the temple with the approach buildings either.[12] The sculptural temple structure is set in a relationship with the landscape, the sky, and the forces of nature associated with the god to whom it is dedicated, rather than with the works of human beings or even with human beings themselves.

Use of orders

The architecture of the approach buildings – all non-peripteral – is inspired by the rules of a variety of orders. The Doric, considered to be the main order, is only used on a diminutive scale. The Athenian Treasury (figure 2) has two tapered Doric columns, marking its entrance, and thirty metopes scaled to the same proportional system as the columns, running around the rectangular building, with sculptured reliefs representing the labours of Hercules and Theseus. The pediments are bare of sculpture. The Athenian Stoa (also called the Athenian Colonnade) has widely spaced monolithic columns of Pentellic marble with Ionic capitals and attached bases (figure 3). This building, situated in front of the polygonal wall of the temple terrace, stands in direct contrast with the temple immediately beyond it, which exemplifies the Doric order. In general, the approach buildings show considerable experimentation with and adaptation of the rules of the different orders, including the use of caryatids (in the Cnidian and Siphnian Treasuries) as a substitute for columns, and the introduction of a frieze in the Siphnian Treasury.[13] In addition, walls as enclosing elements dominate the architectural designs, but they are offset by the decorative qualities of the orders used *in antis*.

By contrast, the Temple of Apollo is designed strictly according to the rules of the Doric order, fully articulated in all its main architectural components, such as the columns, a frieze of triglyphs and metopes, and pediments decorated with an extensive sculptural programme. As the major architectural units, the monumental columns are canonical, representative of male strength and character.

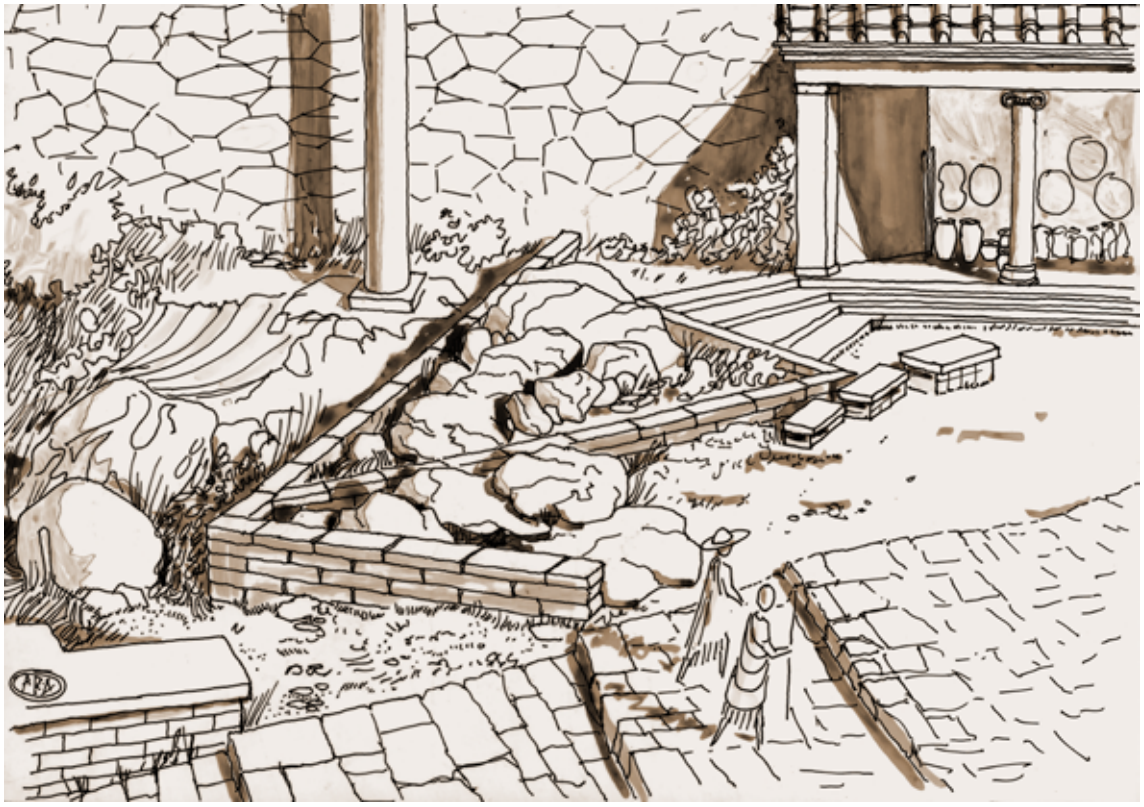

Figure 3
Detail of the Athenian Stoa, the polygonal wall of the temple terrace and Leto's rock, an arrangement that shows a dialectic between built structures and natural features, both fully articulated without physically intruding on each other, even if the visual effect is jarring.

Dialectical relationship between blemished and fragmented buildings and the Doric temple of unified design

In the approach the treasuries are free-standing, but not in relation to the mountain and the sky. They are rudimentary structures, enclosing a single interior chamber. Compared to the temple design they are hybrids and incomplete temple-like structures, in that they lack a peripteral plan. Only their main facades have porches with columns. Not all gable ends are finished off with a pediment or a decorative frieze, and also the Athenian Stoa has one hipped and one gable end, rendering it asymmetrical. The facades of the treasuries are symmetrical and decorated to an extent, but the side and rear elevations offer blank walls without columns. Nevertheless, the varied articulation and application of decorative devices provide the treasuries with a pleasant aspect. They appear to be isolated cellas and therefore incomplete, fragmented temples.

Rex Martienssen made the interesting observation that the approach structures prepare the participant for the climactic view of the temple placed at the end of the way.[14] He notes that many design characteristics present in the temple, which is an integrated totality of architectural parts and units, are separate and scattered amongst several incomplete structures in the approach in which porticoes become peristyles. Martienssen considers the approach structures as a substitute propylaeum, collectively serving the same function as an elaborate entrance building, such as the Propylaea on the Athenian Acropolis, as a means of securing a sense of adjustment and preparation for the participant as spectator before encountering the temple that is articulated by a fully developed order. He provides the following description of the benefit of the introductory arrangement, leading the participant to the climactic viewing event at the temple:

> 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 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.[15]

Clearly, the temple is a complete building, articulated in plan and peristyle; both gable ends are sculpturally complete, and components of the Doric order are unified in all respects. Unlike most approach buildings, the temple is situated on stepped terraces, elevating it and exhibiting every facet of its completeness so that it can be viewed from all sides.

Because the temple is the only fully resolved building in the temenos it has – in the terminology of Kevin Lynch – high "imageability".[16] It is the one building in the temenos that the participant cannot disregard, and its image remains impressed in the mind.

Architectural components and natural features

Geographically Delphi is situated about 150 kilometres northwest of Athens, close to the northern shore of the Corinthian Gulf, on the foothills of Mount Parnassus. The temenos of the Temple of Apollo is set on the northern slope of the Pleitos Torrent Gorge, within a natural amphitheatre of limestone cliffs that rises a staggering 300 metres above it, enclosing it on three sides and then opening onto the valley of Amphissa and the Gulf of Itea. However, to the Greek planners and builders of the sacred place it was mythically situated at the centre of the universe and, since remote times, was marked by an *omphalos* or navel stone. The first temple on the site was dedicated to the goddess of the earth. Therefore, according to Scully,

> Delphi must [...] have seemed to the Greeks the place where the conflict between the old way, that of the goddess of the earth, and the new way, that of men and their Olympian gods, was most violently manifest. There can be no doubt whatever that it was the landscape itself which gave rise to this belief and which dictated the presence of the shrine.[17]

In their basic geometrical shapes and structures, all buildings are unnatural, but by various design practices architecture may nevertheless be brought into harmony with its natural setting: first and foremost, by respecting the guardian spirit of the site, its *genius loci*.[18] In pre-classical and classical times, the belief that the spirits of a place were to be appeased and left undisturbed by a settlement was a form of nature worship

or animism, which had a profound influence on architecture.[19] The Greeks chose the locations of their sanctuaries not only on the basis of practical considerations but also for the symbolic meaning attached to the surrounding landscape; hence the horn-like peaks, or cliffs, that provide the backdrop to many of their sacred sites.[20] It was believed that such locations were imbued with intrinsic spiritual qualities long before temples and other buildings were erected there.

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. The builders seek to reflect them in architecture and in so doing enhances the natural qualities of the landscape, making them more prominent.[21] Scully identifies a characteristic, 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.[22]

If the approach architecture in Greek sacred ensembles or groups may be called varied, it is because of the builders' reaction to the intricacies of the location which they chose to retain, if possible, or modify but not to destroy with regular layouts which the natural environment did not suggest to them.[23] At Delphi only the way and several stairways are definite clearings in the approach: the buildings are constructed on low podiums and their entrances reached by a few steps, but the areas surrounding them are not cleared or levelled. Like the temple, the approach buildings have geometric shapes, being basically rectilinear and cubic. However, some circular structures in the approach, like the Epigonoi and the Kings of Argos monuments, provide a contrast. These rounded forms are transitional features: they are geometric, like the shapes expressed in more complete buildings but also suggestive of natural forms, as are some of the compositional components of the architectural orders. Thus, the upright forms of columns, especially the Doric, echo tree trunks, from which their design may have been derived.

The Greeks meticulously cut and dressed the stones they used in all exposed positions, especially in their temples. A case in point is the renowned and skilful polygonal stonework of the temple terrace at Delphi (see figure 16) which clearly reinforces the interplay or dialectic between raw rock and polished limestone and marble building blocks,[24] and between the architectural and the natural. Indeed, the greatest contrast at Delphi is between the smooth finishes of the buildings that are set against the roughness of mountain rock. With the mighty Holy Parnassos behind them, the mere human scale of the approach buildings, in particular, is asserted in their architectural design. Hence, E.A. Gutkind refers to the massif of Parnassos as

> towering above the Sacred Enclosure, forcefully reminding man of his insignificance and the human scale of even his most sacred works.[25]

The criterion by which the integration of constructed components and natural features at Delphi is to be judged is not that the buildings were made to look natural, or even that the topographical features in the approach were left undisturbed as far as possible, but that the variety and complexity of the landscape features were complemented by an equally varied and complex site layout and architectural design.[26] The approach was allowed to develop over time, reminiscent of the sky and the seasons that change continually.[27]

One may refer to the interaction between constructed components and natural features as a dialectic in the sense that the components override their duality by synthesising differences that are otherwise mutually exclusive. The term refers to the manner in which an architectural statement or action opposes a natural feature or force, and vice versa. Thus, a dialectic denotes the bonding tension between structural components, features or forces without a complete coalescence: each expresses fully a strong, uncompromising presence, but briefly, then relents and acquiesces to the expression of an ultimate new totality. The juxtaposition of architectural component parts and natural features forms a continuous interaction in the approach at Delphi. A typical example is the manner in which a few steps on the sloping site are in dialectic with 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 natural rocks, such as Leto's rock, or unevenness (figures 3 and 4), left respectfully intact – perhaps even celebrated as uniquely part of the totality of the temple prcinct layout.

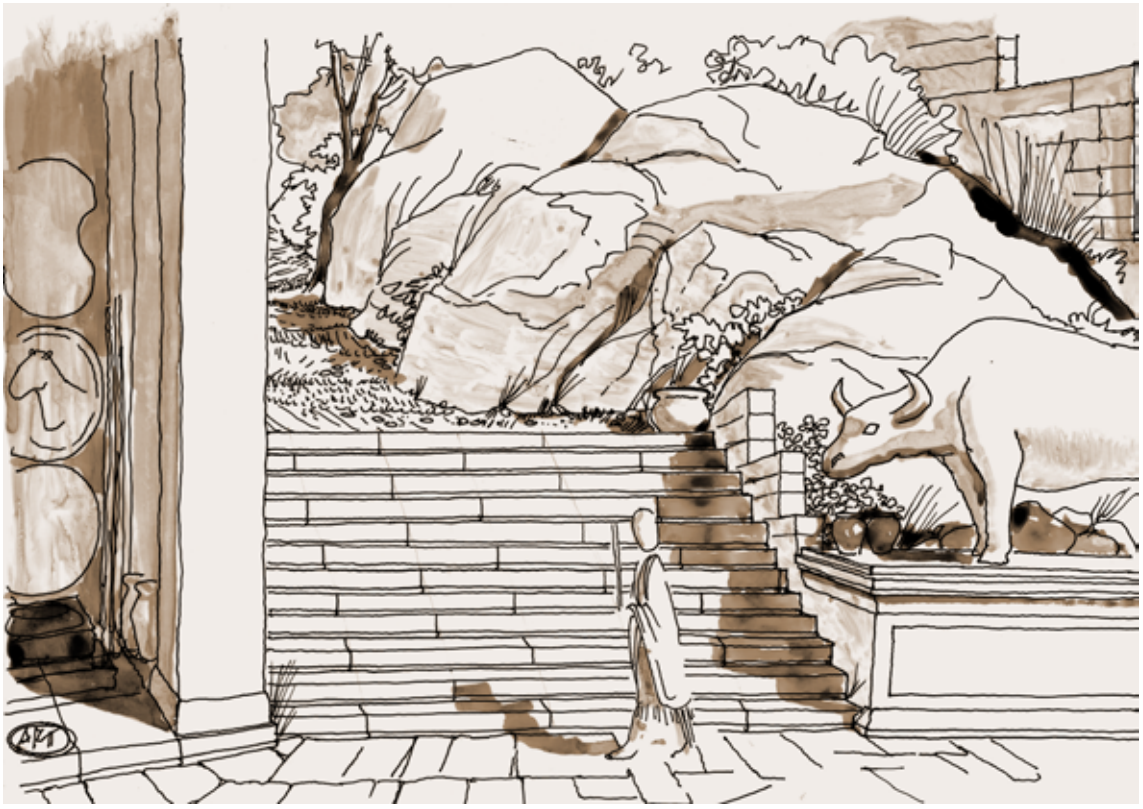

Figure 4
The arrangement of the Corcyrian bull and the adjacent stairway at Delphi shows a dialectic between constructed components and natural features.

Likewise, here is a dialectic between the constructed components themselves, especially in the approach (figures 2 and 5). There, each building and architectural element has its own axis, orientation, completeness in itself, and minor self-importance or own private existential meaning, again respectfully left intact and permitted to be unique and permitted to be celebrated as such. Except that they are evenly matched in scale, it seems that the creation of a harmonious interaction between the approach structures was, paradoxically, either avoided or left unresolved. The way is partly laid out along the contours of the land so that in some places the participant's view of the temple is enhanced. However, in other places the way is cut diagonally across the land's contours in a direction which would deny the participant this unobstructed perspective. Finally, at the last turning the participant would be confronted with a full view of the main edifice.

The dialectic between the natural and constructed or architectural components at Delphi has created a vibrant pattern of opposites. The range of different types and combinations of interactions adds to the visual complexity of the layout, that are resolved only in the temple. Thus the builders left a definite imprint on the site by integrating the architecture into a perceptual totality.

In the approach there is a dialectic between the way, the buildings and the earth, creating an irregular rhythm of many collaborating elements. The dialectic of the temple is with the sky, the mountain and the horizon, subsumed in a dialectic between the entire temenos, arranged by the builders, and the natural mountainous site. Further interesting effects of the relationship between constructed components and natural features have developed with time, forming a pattern of accretion at Delphi as buildings relinquished themselves to nature by weathering, were abandoned or rebuilt.

Summary of the observations of the approach and the Temple of Apollo

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, its architecture exemplifying the divine level, while the approach represents the relative or random level of humankind.

Figure 5
The composition of the Treasuries of the Syracusans, Aeolians and Cnidians at Delphi shows a dialectic between the built structures in the approach.

The temple is clearly visible as a distinct element, set partially against the sky and partially against the landscape. Its terrace is situated where nature was receptive to modification, and the pattern of modification along the approach ends with a demonstration of human beings' ability to enhance nature with the presence of a building which embodies the rational and spiritual qualities of Apollo.

Based on the above analysis one may sum up the architectural qualities of the temple complex of Apollo at Delphi by pointing out that its design is characterised by great complexity and ambiguity. However, the main characteristics are as follows:

The approach consists of a cluster of treasuries, a stoa (or colonnade) and other minor buildings, as well as shrines and sculptures, all bearing a relationship to the way but almost no relationship to one another. This occurred because each addition of such structures along a pathway that may have existed more or less unaltered since the time of the earliest sanctuaries on the site, was done by different parties during the classical period, sometimes with intervening periods of years, decades or centuries. It is not known whether there were controls in this regard, other than the established tradition. However, what each party did was to ensure that its contribution remained small, even if it was executed without much concern for creating a linked ensemble. Each party oriented its addition in a random manner, but left the surroundings with minimum modifications. The retaining walls of pathways and necessary steps were presumably done by some central authority, but this layout also followed a random inducing tradition.

Thus, structures along the approach form a loose group through similar treatment in scale, orientation towards the way, "incompleteness" of structural or decorative articulation, and execution or location with minimum modification to the terrain. Even the Athenian Treasury is no exception, where no attempt was made to turn it into a tiny temple, somewhat like the later Temple of Athena Nikè on the Athenian Acropolis (see figure 9). It may be said that collectively, the approach constitutes what Abbé Laugier called for in architectural design:

> II faut de la régularité et de la bizarrerie, des rapports et des oppositions, des accidents qui varient le tableau, un grand ordre dans les détails, de la confusion, du fracas, du tumulte dans l'ensemble.[28]

Diverse components are scattered all along the approach and in places the site is left in a rough condition – perhaps not consistently or intentionally,[29] since each city would have insisted on a good location for erecting its particular treasury or object of dedication to emphasize its individuality and connection with the way.[30] Despite their diversity and incompleteness of architectural design, the approach structures create a dramatic sense of expectancy of a climactic arrival at the end of the sloping way where the temple is situated, which itself is the most outstanding visual element of the approach. It forms a link between all the architectural component parts of the temenos and the natural environment, purposefully deferring and providing a complete vista of the temple at the Altar of the Chians, which was placed opposite, or in front of the eastern, that is, the main facade.

From its elevated position the Doric Temple of Apollo rises complete and commanding, dominating the sacred precinct with its undisputed preeminence. Seen against the backdrop of land and sky it gathers and celebrates the full significance of Apollo's presence, and expresses the divine order.

The general effect of the approach and the temple as a totality can only be experienced through progression. Here one may distinguish between spaces to move through towards, and spaces created for arrival at the final destination.[31] The lack of defined stopping places along the way discourages the participant from contemplating any structure in the approach at leisure, since its gradient defines it as a space to move through. Nor is he or she encouraged to deviate from the strongly demarcated way. Instead, the impetus is maintained to advance, albeit obliquely, towards the temple, where this progression terminates on level ground.

The fact that the Temple of Apollo is only partially visible from the entrance to the approach creates an apprehension of the purpose of the participant's pilgrimage. Along the ceremonial way its visibility is likewise constantly restricted, affording the participant only partial glimpses of his or her destination. Simultaneously, the participant's impressions of the sacred features of the landscape change as he or she progresses towards the elevated temple, which remains "tantalizingly incomplete".[32] Its main facade becomes a perceptually complete experience only on reaching the altar.

Part Two

The Panathenaic Way, the Propylaea and the temples on the Athenian Acropolis

The Panathenaic Way, the Propylaea and the temples on the Athenian Acropolis

The arrangement of the sacred area of the Athenian Acropolis and the processional way leading up to it is physically very different from the temenos area at Delphi. Here the approach consists of the pathway followed by the Panathenaic procession, from the Dipylon Gate, across the Agora, up the eastern slope of the Acropolis (which cannot be reconstructed in great detail),[1] through the Propylaea, the ceremonial entrance gate to the Athenian Acropolis, past the statue of Athena Promachos to at the east side of the Temple of Athena, the main temple on the Acropolis (see Part Four, figures 20 and 38).

Since free citizens participated in the Panathenaic procession,[2] we may assume that it was not "primarily to provide a spectacle for onlookers, but rather to create an event in which many could take part,"[3] as Edmund Bacon so aptly describes the procession.

The winding Panathenaic Way, cutting through the centre of Athens, afforded the participants many views of the Parthenon, the Temple of Athena (447-432 BCE) as well as of the Propylaea and the other temples on the Acropolis (see figure 22). In Gutkind's analysis: "It was a gradual, indirect approach, which in a subtle way drew the visitor forward"[4] (see figures 24-38).

No buildings like the treasuries at Delphi are placed alongside the Panathenaic Way that leads onto the slope of the Acropolis. The main temple (figure 6) is reached through the Propylaea (figure 7), a transitional building, the link between the processional way and the Acropolis that the participant has to traverse to reach the Parthenon as the main temple, passing by the the Erechtheum (421-406 BCE, figure 8), the Temple of Athena Nikè (planned in *circa* 450, built after 420 BCE, figure 9), as well as the tall statue of Athena Promachos, the altar adjacent to the Parthenon's east side, and the bronze

Figure 6
The Parthenon on the Athenian Acropolis, dedicated to Athena Parthenos, embodies the Doric order, ultimately refined and optically corrected.

Figure 7
The exterior of the Propylaea, the gateway to the Athenian Acropolis, resembles an incomplete Doric temple that has been purposely fragmented and blemished.

Figure 8
The Erechtheum on the Athenian Acropolis is an exquisitely detailed temple, but fragmented and purposely blemished to the extent that it gives the impression of having been cut up and re-assembled incorrectly.

Figure 9
The Temple of Athena Nikè on the Athenian Acropolis is an exquisitely small, tetrastyle and amphiprostyle building that is obliquely oriented to the axis of the Parthenon on a cramped locality.

workshops. These buildings and structures all belong to the main temple's perceptual and processional field of force and attraction. The layout of the approach and the placement of the Propylaea and the group of temples on the Acropolis create the sense of spatial sequence engendering the effect of serial vision, culminating in the full view of the grandeur of the main temple: "Indeed the position and size of the Parthenon are comprehensible only when it is viewed in relation to the entire Panathenaic sequence."[5]

As in the case of Delphi, the architectural treatment of the Doric temple, that is the Parthenon, is completely different from that of the buildings in the approach precinct on the Athenian Acropolis. The differences in treatment can likewise be explained under the following headings:

Scale
Orientation and axial layout
Use of orders
Dialectical relationship between blemished and fragmented buildings and the Doric temple of unified design
Architectural components and natural features

Observations of the Panathanaic Way, the Propylaea and the temples on the Athenian Acropolis

Scale

The Panathenaic Way leads upwards through the lower, secular city, to the hill of the Acropolis, the elevated sacred city. The cityscape is dominated by the hill itself, which was one of the highest points in urban Athens. It was made all the more prominent by the temple complex built on it, framed by an expanse of blue sky. The buildings can still be seen distantly from the sea, as well as from the city below. However, the scale of the buildings, even now, only become apparent as they are approached up the sloping way to the Acropolis. Their architectural detailing of columns, pediments, sculptural elements, as well as the use of colour on architectural components and sculpture, become more distinct at close quarters (see figure 36).

During the middle of the fifth century BCE the rocky outcrop on which the Acropolis is set, was reinforced and extended to some 320 x 127 metres after the original plateau was extended by means of retaining walls. Viewed from this elevated site the features of the surrounding natural environment are truly vast[6] in relation to the limited size of the classical polis.[7] The Parthenon occupies the largest area on the Acropolis and, accordingly, is the dominant building there.[8] However, the Propylaea, while not occupying a large area, is not on a notably smaller scale than the Parthenon. By comparison, the Ionic tetra- and amphiprostyle Temple of Athena Nikè is constructed on a sculptural scale, like the treasuries at Delphi. The Erechtheum is of an intermediate scale, somewhere between the Temple of Athena Nikè and the Parthenon. Pheidias's lost bronze statue of Athena Promachos had superhuman dimensions, standing approximately 18,5 metres tall from the foot of the pedestal to the tip of the goddess's upraised spear (see figure 31).[9]

It should be noted that before Athens had been laid in ruins by Persians, the area of the Acropolis was sparsely covered by buildings that were smaller than had been originally intended. Even after the reconstruction undertaken in the time of Pericles, the Propylaea and the Erechtheum being left incomplete, the open area remained larger than the built-up area to accommodated the participants of the Panathenaic procession, together with sacrificial animals. The relationship of open space to built-up area is such that, from the area where the statue of Athena Promachos was situated, the participants could take in views of all the buildings, and especially the grandeur of the Parthenon,[10] that enabled them to approach and measure them relative to their own human dimensions.

Orientation and axial layout

As noted by Scully, Mnesikles placed the entrance of the Propylaea on "the long axis from Salamis to Hymettos" (figure 23).[11] This axis is within three degrees of being parallel to that of the Parthenon and the long axis of the Acropolis, thus aligning it with the total architectural ensemble on the Acropolis and, at the same time, demarcating the threshold that the ceremonial Panathenaic procession has to cross to enter from profane into sacred space. However, fixed axes between buildings are not the determinants of the final design of the architectural complex on the Acropolis since no axis runs through the centre of any building to the centre of any other building. The buildings are placed to come into the field of vision[12] of participants who passed through the Propylaea, assessed by Constantinos Doxiadis as:

> An example of a perfect architectural synthesis based not on principles devised on the drafting board but on the movement of a man walking on the rock.[13]

There is a distinct perceptual relationship between the Propylaea, the Erechtheum and the Parthenon. An analysis of the planning reveals that no geometrically precise orientation of these buildings in relation to each other was intended. Furthermore, no building is oriented towards any of the main compass points; all buildings are placed in a seemingly irregular relation to one another, and their sides are not immediately perceived as running parallel because of the differences of level between the Propylaea and the Parthenon. Coherence is derived, rather, through serial vision, in "a series of jerks or revelations",[14] not in a calculated, smooth manner as would have been the case of a rigidly axial layout on a level site.[15]

The Parthenon is oriented East/West and relates to the sky. Scully describes it as representing "an exterior, impenetrable presence, associated with the active forces of the male standing out against the sky."[16] However, the implicit exterior emphasis on the masculine inherent in the Doric image dialectically interacts with the feminine elements of the other temples, as well as with the sky as a natural element. This coordination of natural and architectural forces is the Greek gift to humankind. Thus the orientation of the other buildings on the Acropolis is meaningful mainly in relation to the main temple. In no instance do they intrude on its dominance.

Use of orders

On the assumption that the Doric order was considered the most appropriate for major temples, the Parthenon, an eight by seventeen peristyle structure, is the pre-eminent building on the Acropolis. However, this main temple does contain several minor Ionic features, of which the continuous frieze above the prostyle porches and round the top of the cella walls is the most important. This may have been seen as an enhancement of the intermediary zone between exterior colonnade and interior cella, a hollow space, considered feminine, like the Ionic order.[17] Even though the Parthenon was dedicated to a goddess, it could be considered "masculine", by virtue of its Doric exterior.

No building on the Acropolis challenges the supremacy of the Parthenon. Not completely constructed of Pentellic marble like the Parthenon, but with details in Eleusian dark stone, only the gable ends of the Propylaea are Doric, hence the building as a whole cannot be described as Doric. The passage through its interior is lined with Ionic columns. The duality of orders in this building prefigures the participant's view of both the Doric Parthenon and the Ionic Erechtheum which will progressively come into his or her field of vision.

The Erechtheum features the Ionic order on two porches and caryatids on the third, which underlines its feminine presence. In this respect it does not oppose the main temple by its proximity, but complements and enhances its masculine and dominant presence.

The small and appropriately Ionic tetrastyle and amphiprostyle Temple of Athena Nikè, would not have been in the direct field of vision of the participant entering the Acropolis through the Propylaea. However, before the participant entered the Propylaea, it would have been etched against the sky (see figure 27). It thus serves the same purpose as the approach structures at Delphi: to raise an expectation of perceptual discovery and fulfilment.

Dialectical relationship between blemished and fragmented buildings and the Doric temple of unified design

As at Delphi, the main temple on the Athenian Acropolis is perfect and complete. The exterior of the Parthenon exemplifies the Doric order with all its structural components such as columns, architraves and pediments refined and finished off, complete with sculptural motifs on the pediments and metopes. From a distance it can be conceived as a unified, symmetrical whole silhouetted against the sky, while for a viewer standing on the Acropolis, it reveals all its compositional components as complete in themselves and resolved within the unity of the whole.

In the ancillary temples on the Acropolis some compositional components are left unresolved. These buildings, notably the Propylaea and the Erectheum, are incomplete, they are not symmetrical structures and are not fully articulated according to the rules of a classical order. It is postulated here that these imperfections are not an omission, but compliant with the intentions of the architect. This postulate is borne out by recent scholarship.[18]

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, and this building, placed in the western approach, could not be fully built as planned. The south wing, opposite the Pinakotheke, is smaller than intended because of impeding construction difficulties on a site flanking the outcrop of rock on which the Temple of Athena Nikè is placed.[19] Furthermore, two symmetrical wings, of more impressive dimensions than the Pinakotheke, remained unbuilt on the eastern side. Similarly, the open colonnade to be substituted for a west wall in the wing opposite the Pinakotheke, in order to allow free access to the bastion and Temple of Athena Nikè (figure 9), was never built.[20] The Ionic order in the central, covered porch and the exterior Doric columns are complete in themselves, but owing to the combination of orders, both are effectively incomplete in the resolution of the building as a whole.

The approximate dates on which construction of the Erechtheum was started and completed are 421 BCE and 407 BCE. Although there are several theories postulating an intended extension of this building to the west, there is no substantive evidence for this claim and the architect's intentions certainly cannot be construed retrospectively without real evidence.

As Doxiadis sees it, however, incompleteness is the architect's material expression of his conception of time, the fourth dimension that synthesises the other aspects of physical reality. Referring to the Acropolis, he lists several examples of incompleteness that imply a pending synthesis:

> The notion of time is perhaps more important in classical Greek architecture than in any of the syntheses I have ever seen, for there it is expressed, not only in motion but also even symbolically, in the unfinished building. There are several elements in the Acropolis of Athens which prove that the architect deliberately left some of his buildings incomplete in order to give visual, material expression to his conception of time as the fourth element of the synthesis. Such is the case with the unfinished Erechtheum, which conveys the impression of the pending completion of the whole synthesis. Even more characteristic is the message of time conveyed by the incomplete cutting of the marble blocks used in several ancient buildings. On the Acropolis of Athens this is especially apparent in the walls of the Propylaea, where the marble blocks have never been completely cut — although the Acropolis and all its buildings remained in full use for many centuries after their construction had been completed.[21]

The visual impression made by the Propylaea and the Erechtheum leaves some doubt about their completeness. No such doubt would have arisen in the participant's mind about the main temple. The difference between clear and "allusive design"[22] is evident in the architecture of the Acropolis.

The main temple perfectly exemplifies the design criteria for the Doric order. The architect was Iktinos (active *circa* 450-400 BCE), appointed by Pericles to work under the supervision of Pheidias (*circa* 490-430 BCE), the chief sculptor.[23] Except for the timber roof beam supports and the clamps and dowels, the Parthenon was built with Pentellic marble, and the building blocks were finished with the same care as the sculptures. Architectural detail and sculptural decoration were given emphasis by the application of colour. It is worth be noting that "The four corners of its stylobate are not perfectly level with one another, and there are notable faults of execution in the architrave, frieze and cornice."[24] It may also be argued that the octastyle portico diminishes the perfection of the temple in that it presents elevations too wide to take in at a glance.[25] Nevertheless, the design and setting of the main temple remain characterized by consistency, dominance and clarity, and no errors of design detract from its value. Thus Frederick Winter argues that

> Iktinos deliberately employed the unusual octastyle facade, pronounced angle contraction, and shallow prostyle porches, in order to produce a harmony in plan and elevation that could not have been achieved in any other way.[26]

The proportions of the Parthenon conform throughout to a ratio of 9:4, which is pleasing to the human eye, even though a mathematical analysis of this fact defies empirical proof of its aesthetic value. In fact, the analysis of its perfection is beyond most, as Philip Johnson remarks:

> I am supposed to be an architect, but I cannot tell you, nor can any historian, why the Parthenon is the masterpiece it is. We can but grasp at bits and pieces.[27]

It is much easier to point out the imperfections in the other buildings on the Acropolis than to explain the perfection of the Parthenon. First and foremost, that the problem of design of the various buildings on the Acropolis was completely different from that of the loose collection of structures in the approach area at Delphi. Different methods had to be applied to contrast the approach and the main temple in this late classical layout. The Acropolis site did not suggest a chaotic, restless layout, as in the case of Delphi's sacred way. 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 sacred order of the main temple with the imperfect, human order of the ancillary buildings.

Since no satisfactory explanation has been offered for the hierarchic and random orders that complement each other in the design of the secondary buildings on the Acropolis[28] it is postulated that the architects resorted to the use of more emphatic devices such as fragmentation and blemishing rather than the lack of articulation we see in the approach structures at Delphi.

"Fragmentation" is defined as the breaking up of the highly imageable form of a building so that it not perceived as a single powerful unity but rather an loose assemblage of components with emphasis on details that is pleasing to the viewer. It is postulated as a design technique in which parts of a building are made imperfect, not through chance, but as dictated by the architect. The presence of such fragmented secondary buildings on the Acropolis is emphatically subservient to the dominant building (the Parthenon in this case) which has, by contrast, a bold, clearly perceived presence.

"Blemishing" is a more inclusive type of imperfection, comprising incompleteness in the sense of incomplete architectural articulation (not in the sense that some buildings were not executed according to the architect's plans), fragmentation and irregularities, especially a lack of symmetry – if these are intentional. Therefore, blemishing is considered to be a rational design technique applied by the architects of ancillary buildings on the Acropolis. Thus, blemishing, or rather purposeful blemishing of a building includes fragmentation. Again, the building's presence and form are made consciously somewhat amorphous by blemishing its overall imageability, and transgressing the rules of Classical Greek architectural typology. This emphasises its place in the hierarchical order of buildings and ensures that lesser structures do not detract from the bold perfection of the main temple.

Other cities in Greece had notable temples, but none has such an elaborate entrance portal as the Propylaea to the sacred complex. The processional way passes through a hexastyle Doric facade. The passage inside, between the inner and outer entrances, had a coffered ceiling, supported by handsome Ionic columns. Its side-wings were intended to be spacious picture galleries (the so-called Pinakotheke), but only the northwest wing was executed,[29] resulting in an asymmetrical exterior. According to Fausto Franco this anomaly is the solution conceived by Mnesikles for the problem of better illumination of the interior, an explanation which may contain some truth:

> Scopo del presente studio è quello di contribuire alla problema [dell' asimmetrie della Pinacoteca], mettendo in evidenza la possibilità che l'anomlìa nella distribuzione

> della aperture sia dipesa dalla necessità technica di un migliore illuminazione dell'ambiente, impostasi quando si decise di adibirlo a Pinacoteca.[30]

In response to various attempts, such as that by Franco, to explain the asymmetrical design of the Pinakotheke, William Dinsmoor argues that by taking different decisions at some points in the execution of the design and construction Mnesikles could just as well, "have created a totally symmetrical scheme...".[31]

Singular among the many scholars whose attention has been attracted to the functional aspect of the Pinakotheke is Pontus Hellström, who "imagines" the Periclean Propylaea "which were never built according to the plans, as a giant banqueting complex" with eastern halls which, if executed according to Mnesikles' plans, 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. He reasons as follows:

> After the great sacrifice at the altar of Athena in the centre of the Acropolis rock during the Panathenaic procession I would imagine various officials, the prytanes, the archons, the strategi and other important participants in the festival to have retired to the eastern halls of the Propylaia. On the same occasion a separate smaller sacred banquet would have taken place in the western wings. The crowd of other participants in the festival would have collected in their thousands under temporary shelters. Feasting on the vast amounts of sacrificial meat in the midst of the monumental surroundings of the Parthenon, the Propylaia and the Erechtheion, created by the great architects of the Athenians, everybody, Athenians and foreigners alike, would equally strongly have felt the greatness and superiority of Athens exactly in the way Perikles would have planned.[32]

Hellström's speculation can be refuted since Greeks who participated in public blood offerings were bound by the formula *ou phora,* as decreed by Solon: meat had to be consumed at the altar and not carried elsewhere.[33]

For more than 100 years scholars have tried with much debate, to come up with convincing reasons why it may be assumed that the Mnesiklean Propylaea was originally planned on more a monumental scale and a more or less complete symmetry between northern and southern parts than that in which it was executed.

It is here argued that Mnesikles obviously expressed the functionality of all the spaces that comprise the Propylaea, but that his intention was not to focus on the symbolic

aspects of its interior and exterior, as in the case of a Doric temple. Instead, he achieved a virtuoso design, avoiding excess by resorting to the controls of blemishing. Even though the Doric order is used on the exterior, irregularities occur. For example, where the way passes through, the intercolumniation is wider than on the sides, and carries two triglyphs. The roofs of the inner and outer porches are on different levels owing to the irregularity of the site. The roof of the inner porch cuts into the base line of the pediment on the west side, a detail what was most probably conveniently out of sight, but, as J.J. Coulton observes, "The separate roofs given to the various elements also emphasise their individual form, so that the solid masses compete with the space they define."[34] The Pinakotheke had a hipped roof, not finished off with pediments, as one would expect of a unit planned like a megaron. Furthermore, the metopes are not decorated. Finally, the Ionic columns in the interior are unprecedented in defining, in a building with Doric facades, a public space through which movement occurs. Since the function of the Propylaea is to define the entrance to the Acropolis and give access to the approach to the Erechtheum, the Parthenon and the altar, the present author's conviction is that the architect partially sacrificed its importance as a complete building in its own right.[35]

J.A. Bundgaard offers an explanation for the anomalies in the design of the Propylaea, which, however, he himself declares unsatisfactory:

> It is clear that Mnesicles has not treated the separate units of his building as parts of the whole, but has concentrated his attention on the unit: the single house, the single part of the house.
>
> This is an attitude we do not expect to find in any architect, especially not in an architect working on such subtly harmonised complexes as the Doric forms of Mnesicles' building.[36]

Bundgaard correctly maintains that the architect did the unexpected in his design. However detailed Bundgaard's explanation of how Mnesikles concentrated on "the unit" in his building, however, he nevertheless fails to recognise the architect's main purpose in the totality of the architectural hierarchy on the Acropolis. Clearly, Mnesikles as the "second man",[37] that is the second architect on supremely significant building site, was wise enough to plan the Propylaea and its "Doric forms" as consciously blemished so as not to detract from the Parthenon,[38] since it is clear that his planning had begun long before the new Parthenon as the *opus perfectum* was completed.[39]

A similar design strategy is applied in the Erechtheum, which is completely asymmetrical with irregular levels, causing the interior spaces to be functionally unrelated. The irregularities of the site and the remains of a previous temple caused the architect to fragment the structure in a seemingly arbitrary manner.[40] The Ionic order is used on two of the three porches, which sets it aside as distinctly different from the Parthenon. Not being peripteral it is also distinctly different from the main temple, and the columns on the 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. These component parts endorse the feminine character of the Erechtheum, but structurally they are a negation of the clarity of the Greek system of trabeation, a lapse of taste and a structural blemish, because visually these figures are an unacceptable expression of load-bearing members. They are both structural and sculptural, hybrids. Greek sculpture was done in relief on buildings or free-standing, while the caryatids are free-standing sculptures of female figures that simultaneously serve as load-bearing columns, thus creating a sense of ambiguity. One may conclude that this building has been purposely fragmented.

The Erechtheum depends for its aesthetic effect on meticulous workmanship, as well as the elaboration and refinement of Ionic decorative forms, which are best seen at close range. Although the composite effect of its irregularities is interesting in their complexity, it is actually an unsatisfactory building that is in no sense a model of the perfection of its order, with the result, as noted by D.S. Robertson, some of the details fell out of favour after its construction.[41] If the Erectheum is evaluated as an entity without considering it as part of an architectural ensemble, as Robertson does, its imperfections may be blamed on religious demands:

> The architect, hampered, like Mnesikles, by religious demands, despaired of producing a harmonious whole. He concentrated interest upon detail, and elaborated ornament with a lavish profusion unknown since the sixth century. His work is the architectural aspect of the general snapping of that tradition given a splendid but artificial prolongation.[42]

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.[43]

These are two conflicting views attempting to account for what seems to be an otherwise inexplicable deviation from an architectural tradition which hitherto had produced satisfactory Classic style Ionic architecture. While Robertson avers that religious interference caused the Erectheum to be a minor disaster, and that the architect consoled himself with "elaborated ornament", 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 author is not reconciled with either of these opinions. The central thesis stated here is applicable to both the Propylaea and the Erechtheum.

The Propylaea and the Erechtheum naturally had to reflect their important functions, but their size could not be allowed to undermine the visual dominance of the Parthenon. The relative dimensions of the approach buildings at Delphi in context with the Temple of Apollo as compared to the spatial organisation of the Athenian Acropolis are evident from figures 13 and 23. The Athenian architect had to find a solution to design two fine buildings, much larger than the treasuries at Delphi, but to "humble" them to preserve the all-important hierarchy on the Acropolis where the status of the Parthenon is inviolable. To achieve this end he invented "blemishing" as a design instrument.

The design characteristics that prevent the Propylaea from matching the grandeur of the newly finished Parthenon[44] are as follows:

First, 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 gives "the illusion of perfect symmetry".[45] 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 obliquely. 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 is applied in the case of the Propylaea as a manner of "spoiling" the building, a practice herein designated as "blemishing".

Second, the building does not have an in-the-round sculptural presence, or the imageability of an elevated, free-standing temple. Its image is of a flat facade with two wings embracing a central court. They are, in fact, space enclosing arms that celebrate or make a shrine of the rocky floor – the bare bedrock of the Acropolis. Clearly, its hybrid style and reduction of imageability blemishes its architectural merit.

Third, what adds to the incongruity of the design is the juxtaposition of the Doric and Ionic orders. In the interior, slender Ionic columns, 10,13 metres high, provide the greater height of the marble beams of the ceiling, however without competing with the dominant but lower Doric columns of the porticoes. Furthermore, the empty metopes contradict the elaborate Doric detailing of the structure. Thus, the Propylaea's message is clear: it has a blemished Doric style that conveys the message to the expectant participant that full metopes and a complete Doric temple should be sought elsewhere, that is in the Parthenon, thus confirming Martienssen's insight, quoted earlier.

Fourth, its utilitarian nature, even as an incomplete building, is clearly expressed. Its function as a gate building is articulated by the unusually wide central intercolumniation of 5,43 metres. However, in concise terms, the Propylaea consists of a building in which the arms hem in the hexastyle portion of the facade, preventing it from becoming like a bold free-standing Doric temple. Its detailing is clearly different from that of a Doric temple and although it contains a Doric frieze over the central opening this element is built as two monolithic beams instead of the usual separate blocks of triglyphs and metopes. A further unique feature is the use of dark Eleusinian stone for certain details, both structural and aesthetic, in an otherwise completely white marble structure.[46] Notwithstanding its monumental scale, complex composition and the superb craftsmanship of its ornamentation, the deliberate omissions and unprecedented components make the whole a building without a self-asserting presence that competes with that of the main temple. However, its profound purpose of spatially articulating the rocky forecourt is clear. Probably the finest example of an architectural/natural dialectic on the Acropolis is the Propylaea's forecourt with its rock floor. It seems, also, that in its awareness of space-time the design of this forecourt became the very basis for future Hellenistic architecture.

The Erechtheum is blemished differently. The drastically split levels across the centre of the building is willfully retained. One cannot conceive that this was a religious requirement to retain these levels, since it would be the first appearance of religious requirements interfering in this kind of detail in the corpus of Classical architecture (with a possible exception posed by the temple at Bassae). In the case of the Erechtheum blemishing is taken even further than in the case of the Propylaea and fragmentation becomes a distinctive design instrument, as follows:

First, the drastic difference in level across the site is boldly expressed and incorporated into the building, fragmenting it into parts, with no attempt to soften or ease the effect of functional disunity.[47]

Second, there is an almost irrational assembly of parts or "traditional" facades, as if a "normal" building had been cut up and reassembled wrongly. The parts are so "badly" composed that the totality remains a collection of fragments. Although this building is fragmented to an extreme degree, the total effect is eased (unlike the Propylaea) by the softer Ionic style and elegant detailing.

Third, besides the above anomalies, there is the incongruous caryatid porch, attached to the south facade without any discernable reason or function. Nevertheless, it has been placed asymmetrically as if there is some elaborate meaning behind the decision to do so. The meaning or function of this asymmetrical composition is, according to our hypothesis, the denial of the idea of a complete Ionic temple and the heightening of 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 viewers may enter. However, once again their sculptural elegance and idealisation of the female figure somewhat hide their role of adding to the blemishing of the Erechtheum.

Fourth, however fragmented the Erechtheum as a composed structure seems to be, when seen serially from the ceremonial route, its positioning gives it an elegant ambience and more than just a flash of interest in the perception of the participant (see figure 34). This somewhat conceals the role of blemishing and fragmentation which viewers would have

perceived as deviations from architectural rules. While traditions and expectations are defied by the diminishing of the powerful presence and imageability of a sacred building, the experience of the Erechtheum is not of ugliness. On the contrary, the participant of classical times would be captivated by beautifully detailed ornamental novelties and somehow lose sight of the whole. As an essentially ambiguous design the Erechtheum is nevertheless agreeable in the manner that its constituent parts are composed.[48]

Much attention was bestowed by the architect (assumed to be Kallikrates[49]) on the Temple of Athena Nikè, completed *circa* 424 BCE (figures 9 and 27). It consists of a single cella, tetrastyle amphi-prostyle, built on an artificial bastion on the south-west side of the Acropolis, which was probably constructed later than the foundations of the Propylaea. Even though conspicuously placed on an elevated site, the Ionic columns and sculpture frieze are not clearly visible, except from very close up. In terms of its size, the stylobate measuring 5,6 x 8,2 metres, this temple is more like a treasury, consisting solely of a cella on the scale of a sculpted architectural object. The most unusual aspect of this temple is the cella, which is wider than it is long.

As the participant passed through the Propylaea on his or her way to the Parthenon, the small Nikè temple would have disappeared from view. Its axis in relation to the Propylaea is oblique and it evokes a feeling of disorientation: is it part of the Acropolis or not? It seems to be more like one of the approach buildings at Delphi than an independent temple. It is more of a foil to the Propylaea than to the main temple, and remains compositionally and visually somewhat obscure in relation to the other temples on the Acropolis.

On the Athenian Acropolis the whole second order in the hierarchy of the ensemble of buildings is encapsulated primarily by two buildings, the Propylaea and the Erechtheum. Both were designed by one man – Mnesikles, who seems to have invented and applied blemishing as a design tool which then disappeared from architectural history. Assuming this to be so, the question arises: where did this architect find the ideas and forms which he used?

What Mnesikles seems to have done is to take the Delphi experience or an unidentified architectural parallel and recreated 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 made them into large and powerful collages when he had the opportunity to do so in Athens. He succeeded in conveying the Delphi experience, which stretches over a long distance in space and time, to the Acropolis, which is much reduced time and space — and with a stronger, more dynamic effect. His control of highly individual and original forms and design strategies applied at the Propylaea and the Erechtheum, already discussed, are masterly and create gripping visual contrasts. Comparatively speaking, one might say the Propylaea is a cold sculptural form, making the Parthenon seem rich and alive as seen by the participant almost immediately after entering the Acropolis. Conversely the Erechtheum, which is smaller, obliquely placed, solid and sensuously ornamented by comparison, seems to make the columns of the Parthenon look austerely beautiful, towering, powerful but also physically and mentally sheltering as the participant moves towards the altar and measures his or her own scale against the monumental main temple. More powerfully still, it represents a divine shelter and a memorial to the dead of the battle of Marathon.[50] There can be no doubt that the Parthenon, which embodies a complete history of former Doric temples, is the first order building on the Acropolis. Undeniably, it is also Classical culture's best monument, a worthy Victory Monument.[51]

In terms of rigour and consistent regularity of form – which were considered hallmarks of architectural perfection during the Classical period [52] – the most meaningful expression of the ensemble of buildings on the Acropolis is given to its main temple. The variety of plan forms in this layout reveals only one plan as ideal and perfect. In terms of Lynch's theory of "imageability" the exceptional or extraordinary member of a group will be the most noticeable. Therefore, as with the main temple at Delphi, one may conclude that the Parthenon has high imageability. Even in its ruined state it remains the most prominent landmark of Athens, but during Classical times it was a symbol of perfection and an embodiment of the spiritual qualities ascribed to the goddess Athena.

In terms of temple architecture, however, one may compare the Parthenon's unique qualities with other Greek temples. Contemporaneous with the Parthenon three other Doric temples were erected: the Hephaisteion (the Temple of Hephaistos and Athena) in the Athenian Agora (*circa* 449 BCE), the Temple of Poseidon at Paestum (450 BCE), and the Temple of Apollo Epikourios at Bassai (*circa* 429-400 BCE), designed by Iktinos. The

Parthenon differs from the three others only in that it is octastyle and has a somewhat tighter, linear and intellectual elegance, even if through these formal refinements, it has lost something of the earlier robustness of Doric temple design.[53] Yet it is still regarded as possibly the most outstanding building in architectural history. The point is that, while it is indisputably a fine building, the Parthenon is formally not very different from its contemporaries. The question here is whether the buildings designed by Mnesikles help substantially, if not indispensably, to make its viewing one of the world's unique architectural experiences. Clearly the answer is "yes", and that the above hypotheses have the agency to compel recognition of Mnesikles, the "second man" on the site of the Acropolis, as one of the greatest architects in history.

Finally the Acropolis, having a primary or first-order building and a whole body of self-conscious second-order buildings as a consistent design policy remains unique in architectural history, turning buildings that would be static if isolated and meant for individual viewing, into a perceptual group dynamic.

Architectural components and natural features

The goddess Athena is given a symbolic incarnation in the Parthenon (figure 6). Earth, human beings and the goddess find a meaningful synthesis on the Acropolis, and her temple represents a "gathering" of physical and symbolic elements in a new personification, which is architecture. This synthesis of constructed components and natural features represents to Scully a timelessness or an experience of an "illuminated Instant which is the whole of time".[54]

The synthesis was achieved by means of practical construction The hill of the Acropolis had to be modified by buttressing the sides and levelling parts of it to make it suitable for building purposes. This modification of the hill had already commenced with the arrival of stone-age settlers.[55] In archaic times, a first temple dedicated to Athena was built in the form of a timber structure. Traces of the second temple, built of stone, remain in the foundations. Neither were the foundations of the archaic Propylaea removed when Mnesikles erected the new structure, but parts were incorporated in the new edifice. In the case of the Erechtheum, the irregular site and the remains of previous structures demanded an irregular building, adapted to the site, but these were not the only reasons for the unusual design since its function also required it to provide for the cults of different gods and demi-gods within it.[56]

It was standard Greek design policy not to modify any site beyond what was absolutely necessary for building purposes. Its original characteristics remained recognisable, as Leonardo Benevolo attests:

> Even in the heart of the city, neither the streets nor the walls of monumental buildings succeeded in concealing the natural contours of the terrain; outcrops of rock and steep natural terraces were left untouched in many places, or cut away and levelled off in a way that respected their natural proportions. Buildings from past ages that had fallen into disrepair were often preserved and incorporated into later ones, and in this way nature and history were both kept alive in the new environment of the city.[57]

The limestone mass of the Acropolis hill was repeatedly modified by the historical process of adapting new buildings to existing foundations and layouts, achieving a loose synthesis of constructed elements. The way up the hill was shaped through use, and especially by the ritual of the Panathenaic procession. What had begun in the stone age as a path trodden by goats was eventually intentionally adopted by architects to allow human beings a sense of gradual, meandering arrival at the gateway to the Acropolis. Therefore the approach, in the form of the sacred way and the Propylaea, was not only designed purely as a means of access, but also to allow the participant a series of unfolding vistas as he or she progressed towards his or her destination. Perceptually, not only the composition of the buildings on the Acropolis is meaningful, but also the linkage between ancillary buildings and the main temple, and between the main temple and the sky, the horizon and the sea.

As at Delphi, there is a dialectic between various components on the Athenian Acropolis, that is, between structural components and natural features, between the various architectural structures themselves, and finally, between the site and the surrounding landscape (figures 10 and 11).

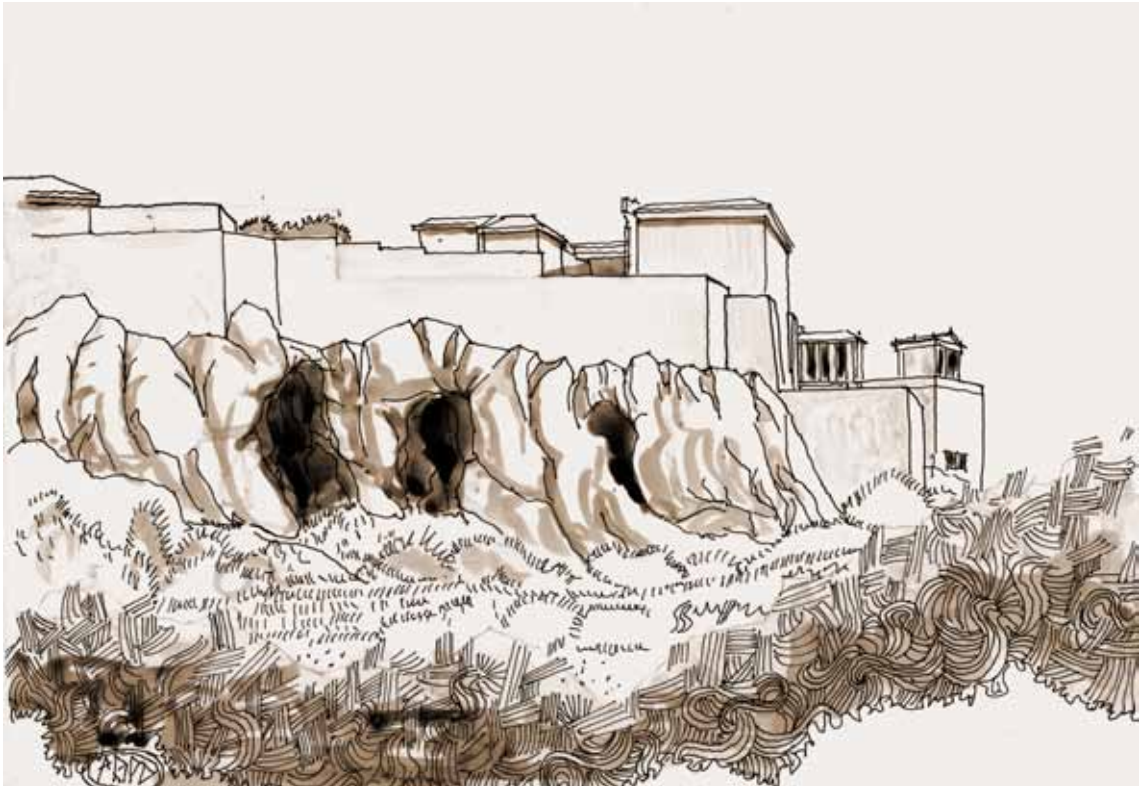

Figure 10
At the Athenian Acropolis the north-west side of the Acropolis wall represents a dramatic example of the dialectic between natural features and constructed components.

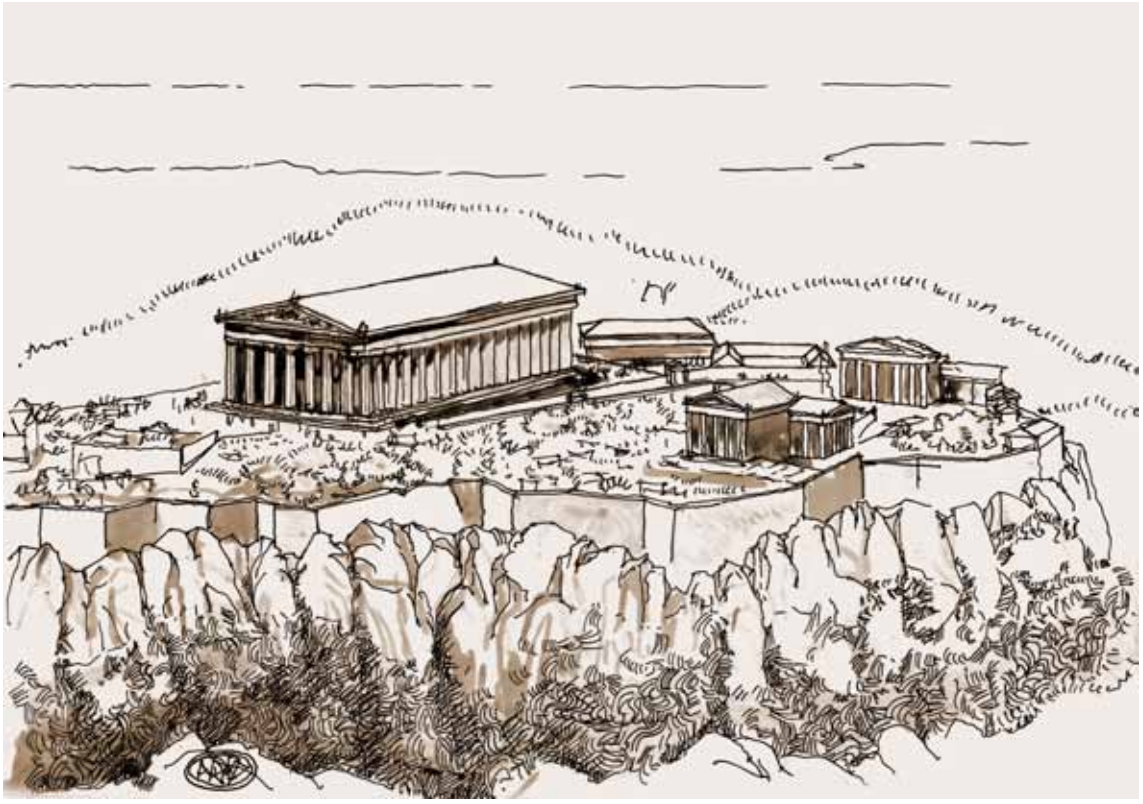

Figure 11
The composition of buildings from The north-east side of the Acropolis wall shows a dialectic between the rocks and the constructed wall: both entities are fully articulated and complement each other.

Summary of observations on the approach and the Temple of Apollo at Delphi, and the Panathenaic Way, the Propylaea and the temples on the Athenian Acropolis

On the basis of the above observations on the approaches and main temples at Delphi and on the Athenian Acropolis, one may draw some incisive conclusions about the design of these complexes during classical times.[58]

The design problem facing the architects of these precincts was: how to arrange the buildings and semi-architectural components in their approach areas to establish spatio-temporal environments in which the divine can be apprehended. The aim of the site layout was the enhancement of participants' religious experience moving towards a climactic destination.[59] A ceremonial procession or a single pilgrimage needs to have a beginning and an end both in time and space. For the participant's experience to be climactic the beginning ought to lead him or her purposefully towards the ultimate object, since meaning is produced retroactively, like in a narrative, in which the end that endows the preceding events with significance. Likewise, the "visual narratives" afforded by the approaches at Delphi and on the Athenian Acropolis serve to enhance the experience of the main temples and *vice versa*. Ultimately, the layouts of these temple precincts represent a hierarchical arrangement of perceptual events: retroactively the secondary buildings and structures that appear visually random, but are indispensable in creating meaningful perceptual totality with the main temple.

The arrangement of the structures in the approach area at Delphi and the secondary buildings on the Acropolis, is based on the principle of serial vision. The changing vistas of the buildings along the sacred way and the incomplete views of the main temple, would have opened up to the participant as he or she moved forward, while the details of the main temple would have become increasingly precise and clear at closer range. Having moved through the Propylaea at Athens, and past the statue of Athena Promachos, or having reached the final turning of the way at Delphi, the participant would have been rewarded with his first complete view of the main temple. At both Delphi and the Acropolis, the designers avoided the use of a straight axis in the layout of the approaches to the main temples, using instead a circuitous approach with the secondary buildings arranged in a randomised layout along the way. Therefore, at no particular vantage point could a participant at Delphi or Athens see all the approach buildings in their full elevations from base to roof line. The retaining walls on the irregular sites and the buildings themselves would have continually blocked out parts of structures as the participant moved towards

the point of culmination. This experience was visually tantalising, and even ambiguous, causing the arrival at the main temple to be so much more climactic than if the layout of the complexes had been on a straight axis so that the main temple was constantly visible in full elevation. At the climactic moment of visual fulfilment the participant would have experienced the perfection of the Doric temple, linking the earth and sky, while the secondary structures, oriented to the sacred way or the participant on his or her way to the main temple, would have been left behind. Both at Athens and at Delphi, the participant's path forwards also had a symbolic impact as he or she moved upwards from below, rising from the depths to the heights.

For the worshipper or participant to experience the temple complexes as described above, he or she would have to take account of, that is, he or she would have to appreciate certain elements of architectural style. First and foremost, the Greeks built according to a system of architectural orders – the Doric, Ionic and Corinthian, each with its own established rules. To recognize these and to experience their effect, the participant had to develop a particular visual sensibility. Then he would be able to recognise the hierarchy of orders and scale in any group of buildings in a temenos, as well as deviations from the norm which might seem to defy analysis. Imperfections in secondary buildings served to draw the participant's attention, forcing him to recognize elaborate refinements to the main temple which complied with the rules of the Doric order, in terms of, for example, optical corrections to columns and stylobate,[60] as well as the curving outlines of parts of the building that had the basic appearance of being rectangular.[61] The Doric temple is indeed a structure of great complexity and, according to Scully, is "an organism as complex in its parts but as serenely whole in its action as any creature on earth, but also totally abstract, as geometric as Melville's ships, a work of man".[62] Paradoxically, however, it is also ingeniously unsophisticated:

> He [the Greek architect] did not think of [the Temple] in and for itself, as just the building he was making; he conceived of it in relation to the hills and the seas and the arch of the sky. [...] So the Greek Temple, conceived as part of its setting, was simplified, the simplest of all the great buildings of the world... .[63]

The ambiguity and complexity expressed in the relationship between the approach buildings and the main temple in the two temple complexes, as well as the totality of the architectural schemes both at Delphi and Athens is attributable to an approach characterised by the use of the various architectural orders on varying scales, as well as deviations from the ideal of symmetry. These two techniques help to point up to the

hierarchical importance of the different buildings. Further techniques utilised in this regard are incompleteness and fragmentation in the expression of classical elements in secondary buildings. The effects referred to are achieved with irregular proportions combined with inconsistencies between internal and external design, in contrast to the main temple which is a single, normative building on a monumental scale, meticulously completed and refined. The ambiguities in the approach equate to purposeful disorderliness, which is induced with a view to using the secondary buildings as a foil to the symmetry and order of the main temple which is geometricised to the point of abstraction.[64] In other words, in both temple precincts dealt with, the architectural treatment of the secondary buildings is referential in the sense that they are intended to condition and enhance the participant's response to and appreciation of the architectural design of the main temple. 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 by a participant who arrives at a destination that has been elusive until the moment of arrival;[65] the approach by itself would be meaningless.

Part Three

Serial movement and visual perception at the Delphi temple precinct

Figure 12
A general view of the temple complex at Delphi from the south. The Temple of Apollo dominates the precinct because of its size and commanding position.

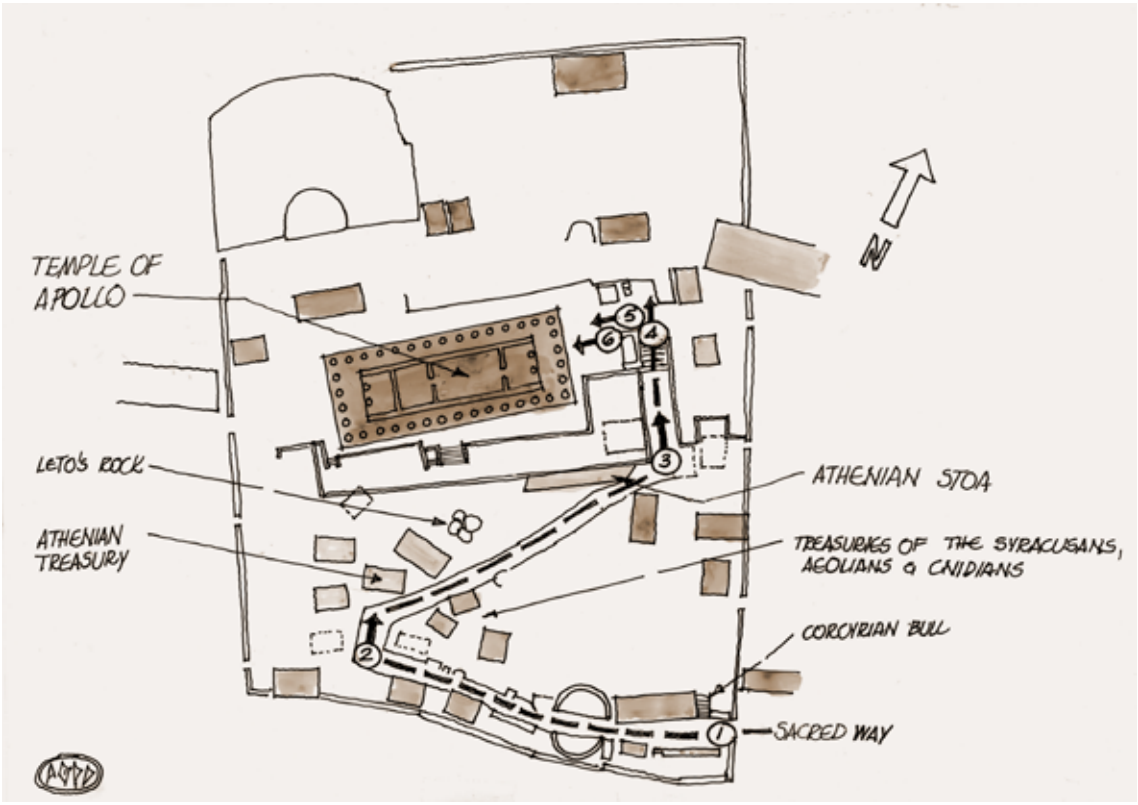

Figure 13
Plan of the temple complex of Apollo at Delphi as it was approximately 300 BCE. This area was continually changing, with old structures being superceded by new structures. Numbered arrows along the sacred way show the approach positions for the following views.

Figure 14
From position 1 on plan the Temple of Apollo, as the participants' destination, is seen above right. The winding, angular approach consists of separate individual structures unified only by the implied movement of the sacred way.

Figure 15
At position 2 of the approach the Temple of Apollo is seen again from a different view. Its dominating size and powerful solid-void structure give it a high imageability potential as the destination and the partial view heightens the participant's expectancy.

Figure 16
From position 3 another fragment of the Temple of Apollo is seen. The significance of the precise detailing of its triglyphs, metopes and mouldings, in sunlight and shadow, begins to emerge.

Figure 17
From position 4 the Temple of Apollo is not in sight, but there is an awareness of its presence. Expectancy is heightened by the appearance of a level terrace and an increase in the clutter of memorials, offerings and random objects.

Figure 18
From position 5 the Temple of Apollo dominates the terrace.
The implied profane activity expressed by the memorials crowding close by contrast with the calm, sacred order of the temple.

Figure 19
From position 6 the main facade of the Temple of Apollo is in full view, echoing some details of the structures experienced along the approach. It is a combination of solid and void, sculptural forms and linear geometry, large massing and delicate detailing. The whole is composed to create a sense of overall symmetry against the rugged mountain backdrop.
It is unmistakably the end of the pilgrimage.

Part Four

Serial movement and visual perception along the Panathenaic Way and on the Athenian Acropolis

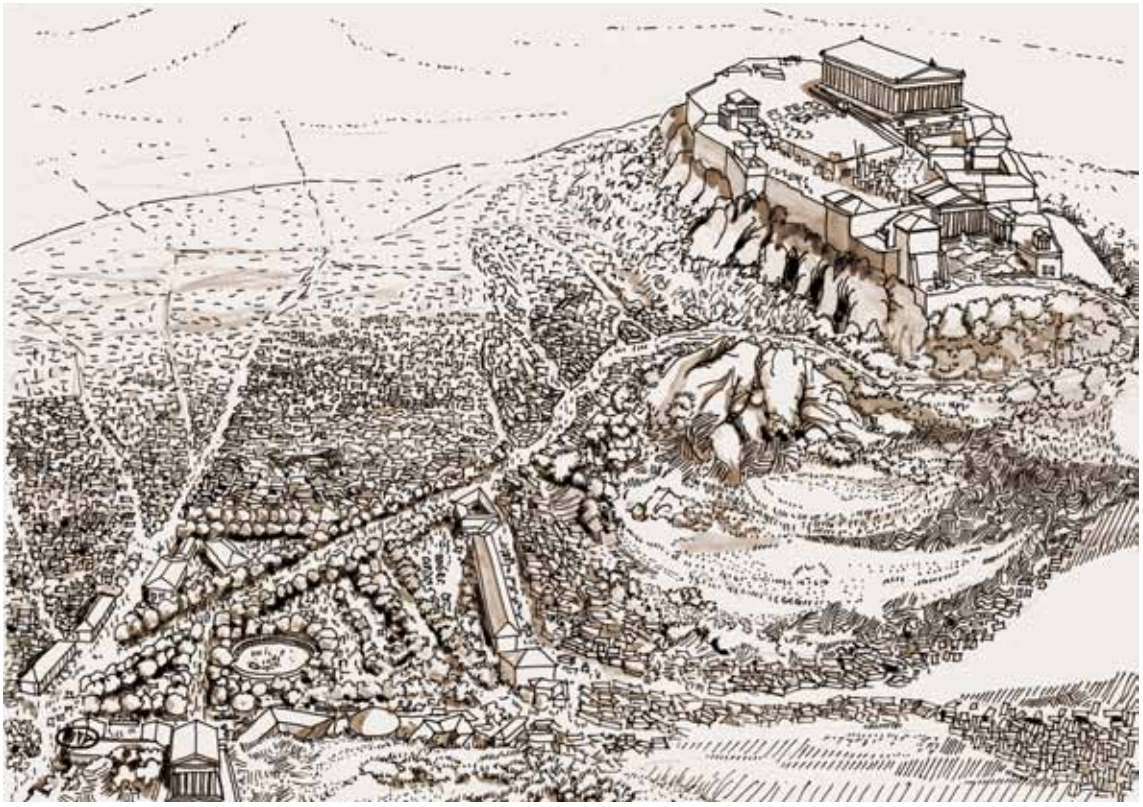

Figure 20
A reconstructed view of Athens at the end of the fifth century BCE, showing the striking position and size of the Parthenon, at the top right, in relation to the city and the Agora, lower left.

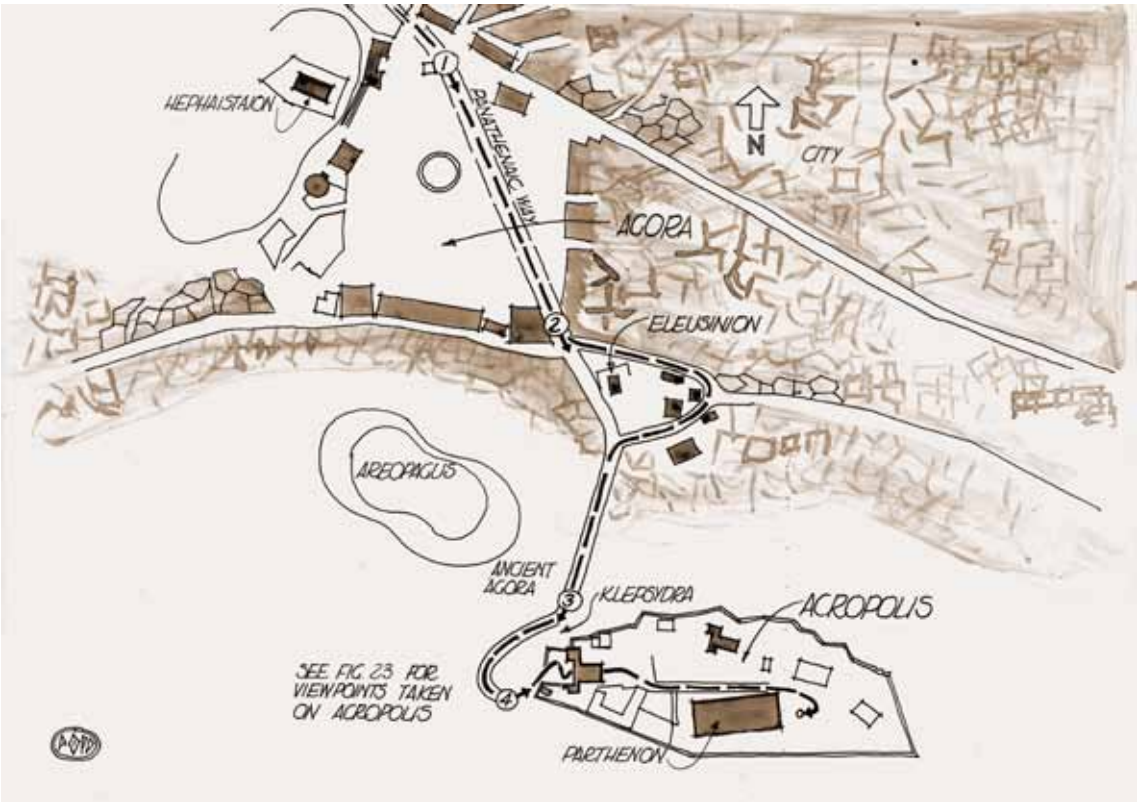

Figure 21
Plan of Athens at the end of the fifth century BCE. Along the approach area the Panathenaic Way cuts across the Agora, rises toward the Acropolis, loops around the Eleusinion, crosses the site of the superceded ancient Agora, passes the hill of Areopagus, enters the Acropolis and leads to the east facade of the Parthenon. Numbered arrows show the positions taken for the following views.

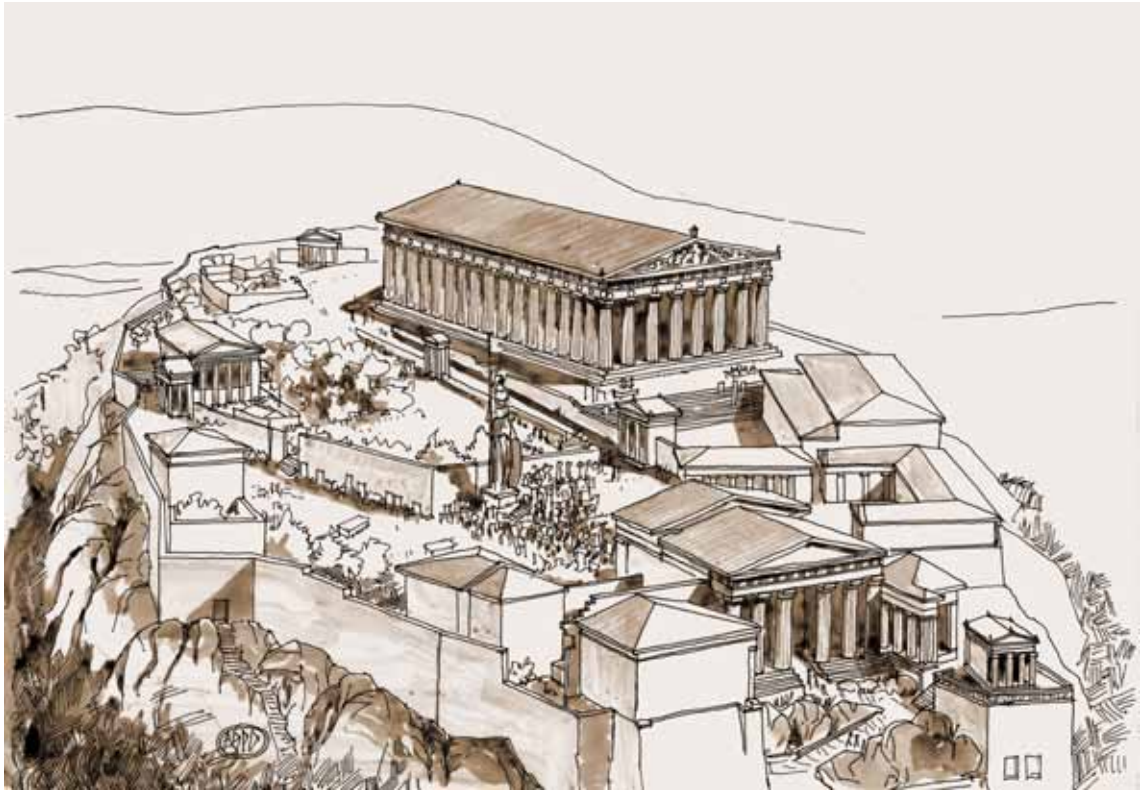

Figure 22
The Acropolis from the northwest, from where the Parthenon's west and north facades as well as parts of other structures are in view.

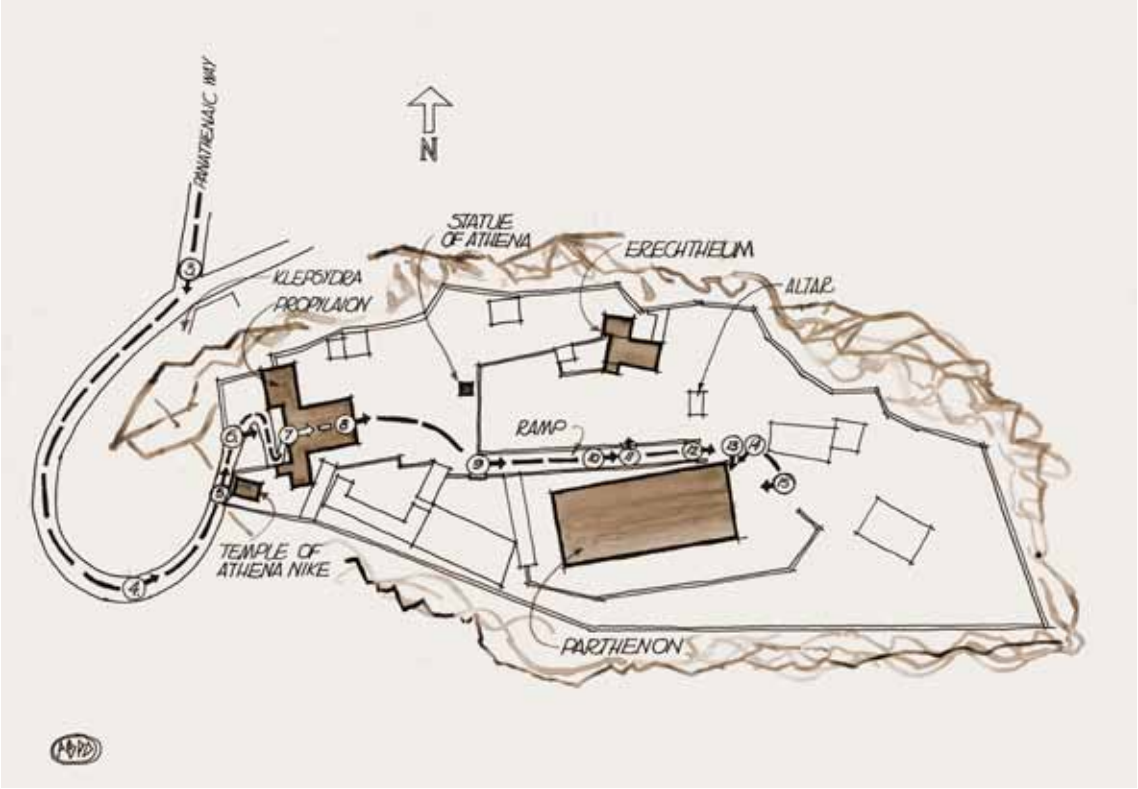

Figure 23
Plan of the Athenian Acropolis. The Panathenaic Way continues through the Propylaea, past the statue of Athena Promachos, up a long ramp to the final viewing position, facing the east facade of the Parthenon.

Figure 24
From position 1 on the plan of the approach, looking across the Agora, teeming with people, activities, buildings and memorials a fragment of the Parthenon isvisible on the Acropolis.

Figure 25
At Eleusinion (position 2 of the approach) the Parthenon is out of sight and the way becomes steeper. The constructed Acropolis wall and its surrounding natural features that form a contrasting unity come into view.

Figure 26
From position 3 of the approach, at the well of Clepsydra, the Propylaea is seen obliquely. In this area the environment is alive with meaning: the great caverns overhead are sacred to Zeus and Apollo, and traditions associated with the ancient Agora can be recalled.

Figure 27
At position 4 of the approach a portion of the Parthenon's west facade suddenly appears against the sky, across from the area that was sacred to Demeter and Aphrodite and once accommodated an ancient palisade fortification. On the left, the Propylaea is partly visible, with the almost complete Temple of Athena Nikè etched against the sky.

Figure 28
Nearing the Propylaea at position 5 of the approach the view of the built structures increases and the sacred precinct becomes less natural.

Figure 29
At position 6 of the approach the Propylaea appears as a prelude to the Parthenon, even though it is an incomplete, subtly irregular building, designed 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 components.

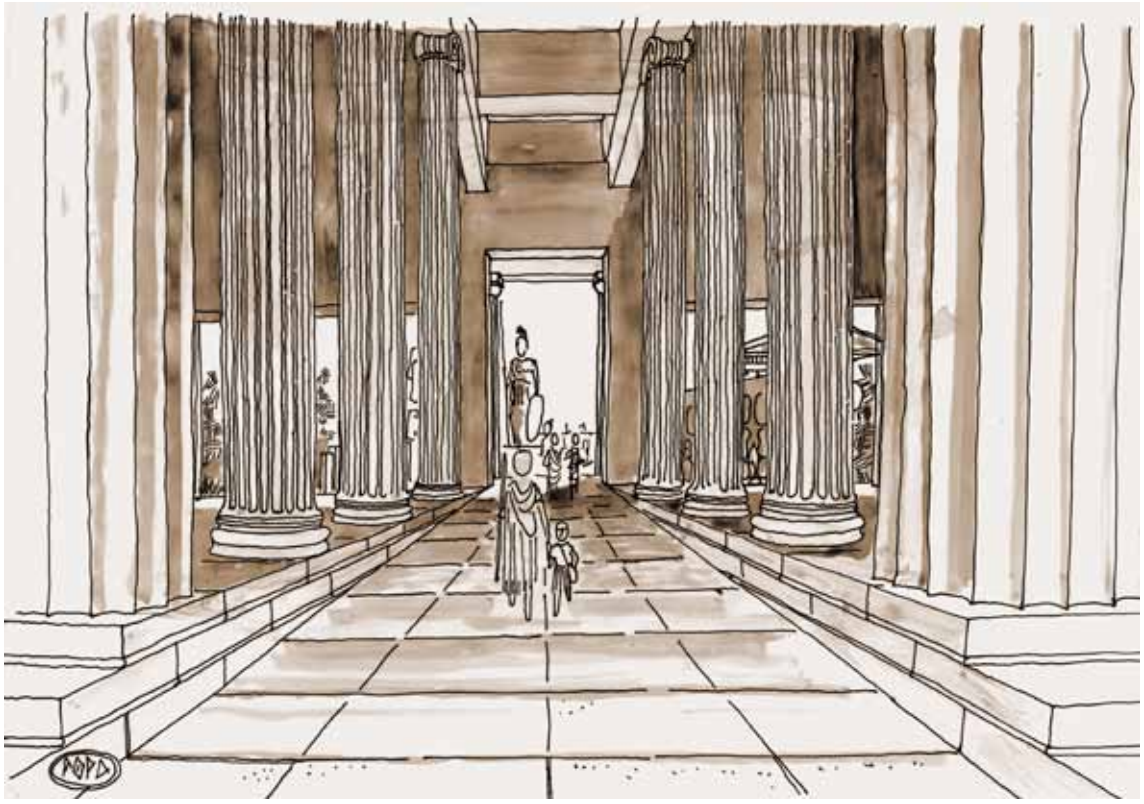

Figure 30
Position 7 on the plan of the Acropolis is inside the Propylaea, where the environment is suddenly totally constructed, symmetrical, ordered, dark and cool. The emphasis is on close-up views of contrasting, sensual, starkly real columns, anticipating the scale of the Parthenon.

Figure 31
From position 8 of the approach affords a view of the statue of Athena Promachus that is surrounded by dedications and offerings, indicating human interaction with the goddess, but creating a chaotic and irregular scene, evoking the clutter and turmoil of routine human existence. The way then veers off to the right toward the partly visible Parthenon, aloof in its scale and orientation, and hinting at perfection.

Figure 32
At position 9 the approach ramps up at an oblique angle to the north facade of the Parthenon. The ramp and the partly visible columns of the Parthenon's northern colonnade seem to converge at a point in the sky, and the two Propylaea hint at the final forms to be revealed as a culmination in the main temple.

Figure 33
At position 10 of the approach the austere ramp has shed the crowded and chaotic conditions encountered in the city below, thus emphasising the culmination of the ascent to a higher, spiritual plane.

Figure 34
At position 11 of the approach a sideways glance through the last propylon frames the Erechtheum, a most unusual building type, emphatically smaller than the main temple, finely detailed, but fragmented and not placed along a discernible axis. In conformity to the Ionic order, its femininity contrasts with the Parthenon's masculine Doric order.

Figure 35
From position 12, at the top of the ramp, the Parthenon can be viewed as a series of robust Doric columns surrounded by and interspersed with sheets of sky, expressing a temple-sky dialectic, while the stylobate points to the distant horizon and features on Mount Hymettus.

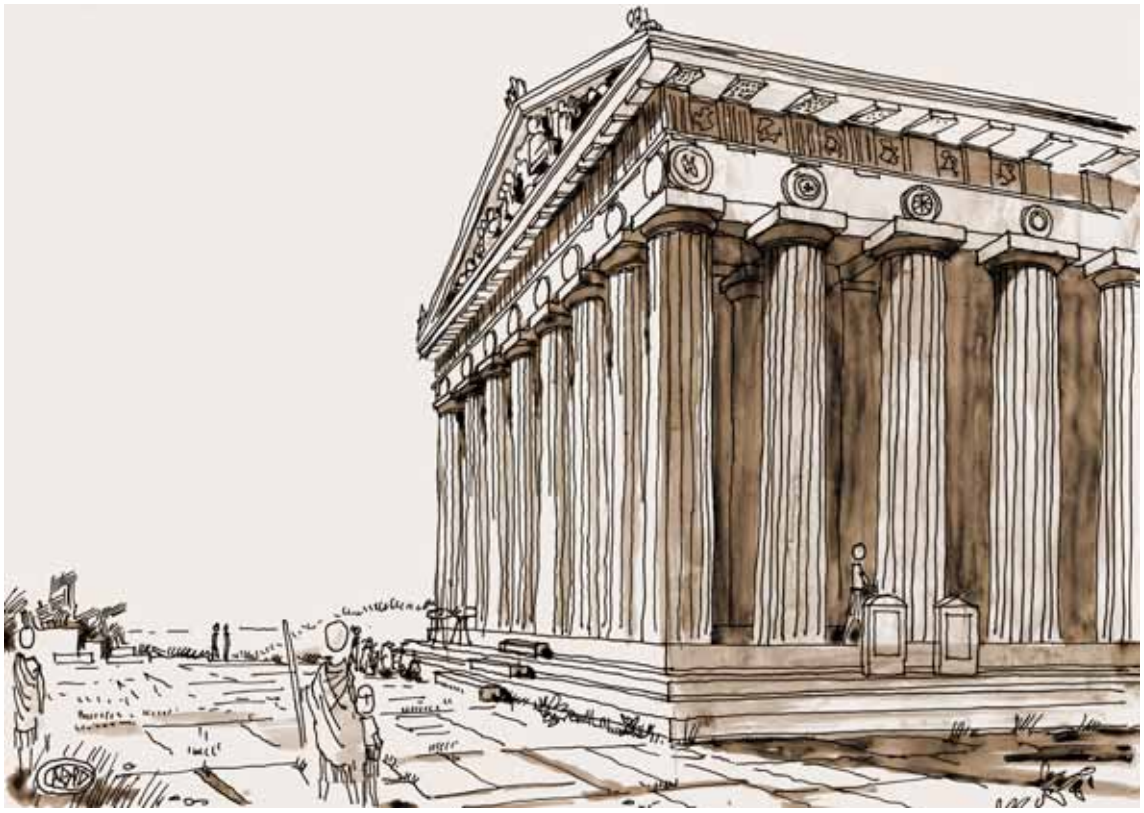

Figure 36
From position 13 of the approach every detail of the Parthenon's capitals, triglyphs, metopes, gutae and mouldings is articulated by sunlight and shadow, emphasising solid and void forms. As the participant moves forward more and more of the fine detailing is revealed from close-up. With each step around the main temple the interplay of sunlight and shadow on the detailing highlights and enlivens new facets of its structure and ornament.

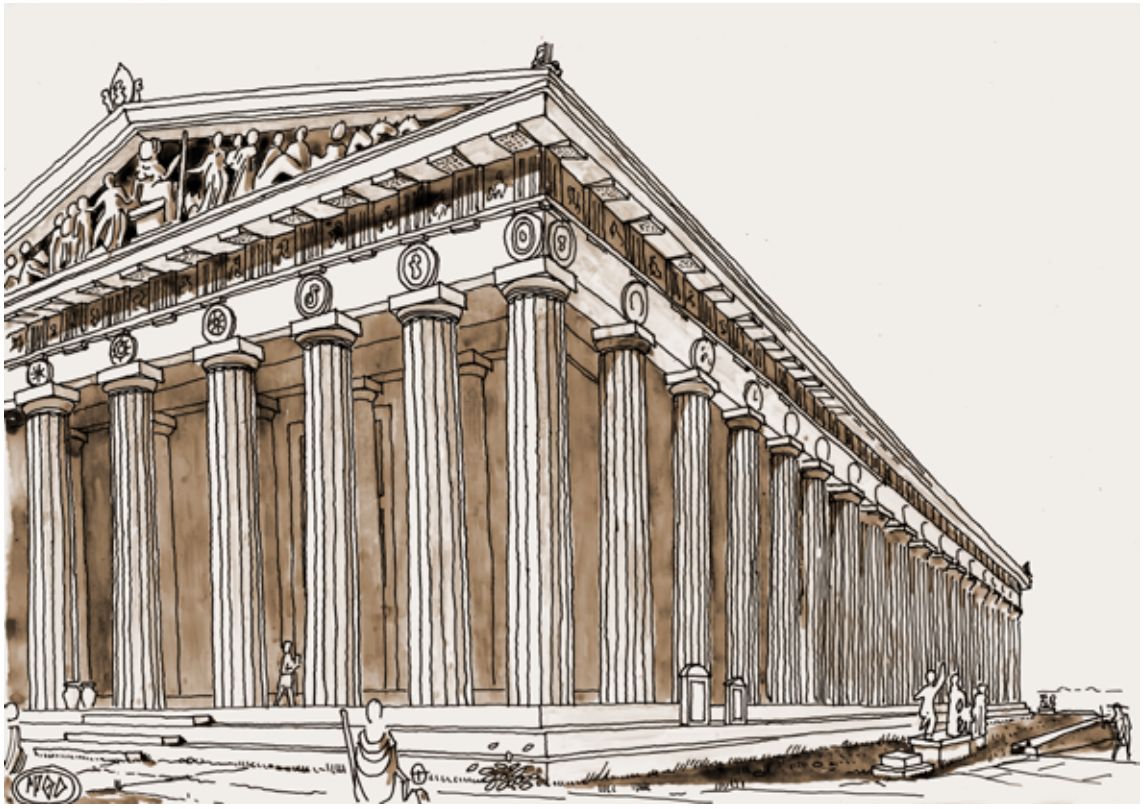

Figure 37
Position14 of the approach shows the Parthenon's axis as directed towards mountains, valleys and the sea stretching to the distant island of Salamis. On turning the corner, a glance backward embraces the full extent of its north and main facades of which two-thirds of its height is a curtain of columns. The tympanum, decorated by divine figures, gives the temple a significance at another level of perception after the teeming disorder of humanity has been left behind.

Figure 38
At position 15 of the approach the expectation created on the way to the Parthenon is fulfilled its east facade's 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 pilgrimage.

Conclusion

Substantiating the propositions

Substantiating the propositions

The analysis of two examples of Greek sacred architecture necessitated certain assumptions. These were indispensable in explaining aspects of the architectural layouts at Delphi and on the Athenian Acropolis; therefore confirmation of their validity may contribute to a fuller understanding of the close relationship between culture and architecture in Classical Greece.

On the sites dealt with it is clear that the Doric temples were the principal buildings in the group ensembles.[1] At Dephi and on the Athenian Acropolis the greatness of the Doric temple was celebrated, verified by Martienssen the as follows:

> The rigidly prismatic form of the Doric Temple, and its overall compactness, render its direct relationship to site and the mode of such transition an extremely important factor in the design as a whole.[2]

Decorative details never assume primacy in the Doric order; on the contrary, it is more austere than the other orders, and symbolic of male strength.[3] Thus the Doric temples are the first order buildings in the sacred precinct at Delphi and on the Athenian Acropolis. Only the main temples at Delphi and on the Acropolis were elaborately finished and conform to the basic rules of their order. In contrast, the secondary order buildings are fragmented and blemished.

The reasons for the unresolved aspect of the secondary buildings open to speculation. Apart from the purely visual aspects of their arrangement mentioned previously, the following reasons for either their non-completion or imperfection are suggested:

First, resources were limited as Greece was never affluent and construction, especially on rough, hilly terrain, was labour intensive and therefore costly. Major architectural undertakings were a drain on public funds and had to be executed with circumspection.

Second, as in archaic times, political and economic circumstances were perpetually in flux during classical times. Except for the stable period under Pericles when the Parthenon and some of the ancillary buildings were built or started on the Acropolis, the political and economic circumstances of Athens were unstable. While this major architectural complex was under construction, adjustments were made to plans. For

example, it is generally assumed that two north and south wings of the Propylaea were never built because the public coffers were drained by the Peloponnesian War.

Third, the religious attitude of the Greeks was animistic: their gods all represented an aspect of the divinity of natural forces. This implied that natural elements on which the integrity of a sacred site depended could not be destroyed for fear of destroying its guardian spirit. Thus all Greek sacred architecture was meant to blend with the topography of the site as well as the total landscape. Furthermore the Greeks had a general fear of offending the gods and avoided all competition with them (having regard to myths like that about Athena and Arachne). Visible deference had to be paid to the transcendent divine order and the mundane human order.

Fourth, religious conservatism prohibited the Greeks from destroying religious buildings already on a site which was to be redeveloped. New buildings had to be adapted to what was already there. Ancient sanctuaries, according to Robertson, were never sacrificed to accommodate "mere magnificence".[4] It is clear that later architects respected the layouts of their predecessors. A case in point is the Temple of Apollo at Delphi which was reconstructed within the confines imposed by existing foundations. Even after the Persians had caused the destruction of the archaic buildings on the Acropolis of Athens, parts of the old structures were incorporated into the foundations of the new buildings, as archaeologists found that Mnesicles had done in the construction of a new Propylaea.[5]

Fifth, the Greek existentialist attitude was based on the determination of each individual to achieve self-fulfilment. B.A. Van Groningen's research led him to conclude about the Greek citizen:

> Eerzucht verteert hem; tot samenwerking voelt hij geen neiging, want samenwerking betekent erkenning van den ander en beperking van het eigen ik. Zijn individualisme neigt tot egocentriciteit; hij is dus ook weinig geneigd een doel buiten zichzelf te erkennen.[6]

This implies a right to self-determination of all men (women were not considered equal to men) and a metaphorical acceptance by the architects of what the site wills the layout of an architectural complex to be. The will of an architect could not be imposed absolutely on a site; buildings, like people and natural environments, have an "instinct" to self-determination.

Sixth, oscillation between dynamic excess and instability on the one hand, and stability and a strong sense of order on the other, seem to be the traits in the Greek character that they projected onto their environmental designs. Van Groningen correlates Greek temperament and culture as follows:

> Meer dan wat anders, heeft hij zichzelf moeten overwinnen, leiden en temmen. Zijn cultuur is het resultaat van een ongelooflijke inspanning,van een harden strijd met de onwillige en tegenstrevende en vernietigende krachten in zijn eigen binnenste. De eenheid en harmonie ervan overwint zeer sterke spanningen en het evenwicht der balans is er een van zeer zwaar beladen schalen.[7]

H.D.F. Kitto also attests to the passionate nature of Greek creativity:

> The greatness of Greek art – and let us use the word in its most inclusive sense – lies in this, that it completely reconciles two principles which are often opposed: on the one hand control and clarity and fundamental seriousness; on the other, brilliance, imagination and passion. All Classical Greek art has to a remarkable degree that intellectual quality which shows itself in the logic and the certainty of its construction. Intellectualism in art suggests to us a certain aridity; but Greek art, whether it be the Parthenon, a play by Aeschylus, a Platonic dialogue, a piece of pottery, the painting on it, or a passage of difficult analysis in Thucydides, has, with all its intellectualism, an energy and a passion which are overwhelming precisely because they are so intelligently controlled.[8]

Kitto's assesment is an acute observation of the way in which Greek art is intelligently controlled is right. This control is especially evident in temple design. Taken as a whole, the temple precincts of Apollo at Delphi and the Athenian Acropolis, including the approach areas, can be described as follows:

The approach area belongs to the "real" world with all its problems, trivia, imperfections and restlessness. It is in some ways perhaps less part of the temple complex and more part of the wide world away from the temple. However, it does "announce" the participant's imminent arrival at and access to the temple so that it is, after all, intermediate between the profane and the holy.

The Doric temple, on the other hand, is associated with the sacred.[9] It induced contemplation of the meaning of the earth, the sky, human beings and the gods, since its physical presence is linked with all these to create spiritually transformative environments. The gods are given a specific concrete presence by means of the pediment sculptures of the Temple of Apollo and the Parthenon. Especially in the case of the latter, the depiction

of the actions of Poseidon and the victorious Athena on the west pediment enhances the climactic viewing of the complete temple by means of the "explosive force of these divine apparitions", as J.J. Pollitt so aptly describes the scene.[10]

Human activity, in the form of constructed artifacts and buildings, blended with the natural environment, actualises the Greek concept of human landscape. Thus, the surrounding landscape is integrated in the layout of the approach and the Doric temples dealt with. Especially the elevated Athenian Acropolis is perceptually uniquely related to the surrounding horizon. If one realises that even though viewed by the participants in stages in the course of approaching the main destination, then one has to admit to a breathtakingly innovative concept in architectural design in which the landscape stretching to all horizons is integrated. This horizon-bound landscape of sacred sited is a superb Classical Greek gift to mankind.

All this points to the fact that the complexity of classical Greek architecture springs from the complexity of Greek character and society. Modern research has established that the way man deals with his environment is fundamental to his behaviour. R.W. White states that healthy behaviour is exploratory, varying and venturesome, requiring an environment which allows and encourages the development of such behaviour.[11] Intelligence is developed not in simple environments, but in complex and ambiguous ones: this is the conclusion of F. Barron who found that creative people can tolerate more antithesis in order to try for later and better synthesis.[12] All this is characteristic of the Greek temperament as expressed in the complex structures and environments of classical temple design which evokes a plurality of meanings for the participant.

Finally the environments created at Delphi and the Athenian Acropolis exemplifies an organic layout that is dynamic and evolving, in which space-time is inseparable for the participant in a non-linear, heterogeneous, multidimensional process of discovery in a creative way.[13]

Coda

The relevance of Classical Greek design for today

The relevance of Classical Greek design for today

In discussing the perceptual element in architecture, Philip Johnson,a modernist architect and architectural theorist, comes to the conclusion: "I shall probably have to take back what I wrote [...] about clarity being of the essence. The House of Architecture has many mansions. There are, I guess, no rules." In the next breath, he confesses: "I am supposed to be an architect, but cannot tell you, nor can any historian, why the Parthenon is the masterpiece it is. We can but grasp bits and pieces."[1]

With this publication it is hoped that aspects of the excellence of the Parthenon, as well as the Temple of Apollo at Delphi is somewhat clarified. Above all, it should be clear that neither the Parthenon, nor the Temple of Apollo are isolated, static entities in their respective precincts, but part of a larger perceptual unity of natural features and lesser structures, the latter abounding in ambiguities and complexities that transgress prescribed Classical rules. H.S. Versnel describes this trait in Greek culture:

> Greeks (that is: some Greeks) pushed frontiers in their quest for consistency, coherence, unity, rationality, order. *The* Greeks never lost an awareness of living in a dissonant, pluralistic, diverse reality. One specific feature of Greek culture, as opposed to our modern culture, is that it displays an unmatched capasity to unshamedly juxtapose the two, tolerating glaring contradictions and flashing alternations.[2]

On the other hand, modern architecture, since the International Style came into its own as the accepted modern style, produced buildings and cityscapes of visually monotonous simplicity, based on theories lauding clarity of functional and structural expression as architectural excellence. Contemporary urban design tends to result in individualistic buildings, about which Fumihiko Maki notes:

> [T]here is almost a complete absence of any coherent theory beyond the one of single buildings. We have so long accustomed ourselves to conceiving of buildings as separate entities that today we suffer from an inadequacy of spatial languages to make meaningful environment (sic).[3]

A meaningful architectural environment is one in which complex building programmes are synthesised, but contemporary urban architecture seldom affords a perceptual climax or a setting for ceremonial or civic participation. In this sense modernist and postmodernist architecture are not even vaguely comparable with the design complexity and perceptual qualities of Classical Greek architecture in precincts in which there is a dialectic between the sacred, the profane and the environment. Most lauded modern buildings are free-standing, but generally lack a suitably designed approach area.

Most often the layout of a modern building is such that one arrives by car close to or at its entrance, which eliminates the opportunity of viewing it from various angles in order to assess its scale, components and detailing. Progression is usually in a straight line from the street to the elevators, a design factor that is not inducive to a meaningful sequence-experience of serial vision. Arrival at a modern building hardly ever evokes a sense of expectation or discovery, especially if it is free-standing, huge and singularly disrespectful of its surroundings so that it can be viewed as a dominant shape from a distance.

In present-day cities all over the world, most International Style buildings tend to be regular and generally lack ornament. This is especially true of most high-rise buildings that are box-like and curtain-walled. Designed by individual architects, these introverted buildings seldom form a coherent group with other buildings in the context of a street or city square. The modern designer's determination to create order through regularity has proved to be an inhuman failure, in the sense that too much order and uniformity contributes to a static, standardized and visually monotonous urban environment. International Style buildings with bare and regular curtain walled concrete or steel structures that were once assumed to be aesthetically expressive of functionality are fortunately passé.

Unfortunately, a reaction against the "tidy" urbanism that dulls the average citizen's sensibility gave rise to an extreme reaction. In the United States of America an admiration for Las Vegas,[4] a gambling resort, disorderly in its visual overstimulation by means of never-ending neon signs, huge billboards, chaotic traffic signs in an environment of garish buildings designed and decorated in dubious taste, gave rise to a seriously considered aesthetic. Consequently, one may say that the modern urban scene is inhuman either because of too much order and uniformity (regulated by countless municipal ordinances), or a complete lack of visual order, expressed in what may be called a Las Vegas "technological vernacular". In this regard Robert Venturi wrote the first postmodernist handbook, a manifesto bearing the title, *Complexity and Contradiction in Architecture,*[5] in which he proposed Las Vegas as a modern example of the complexity and contradiction that he prizes in architecture.

Designs by other postmodern architects, such as Michael Graves (United States of America), Hans Hollein (Austria) and Ricardo Bofill (Spain), once again attempted make use of decorative features. Postmodern experimenters revived various elements associated with historical styles, especially Roman Classical architecture. Revived elements include columns decorated with fantastical capitals and pediments copied from Italian Renaissance buildings (Philip Johnson's Post and Telegraph Building, New York, with a gable *à la* Palladio comes to mind). Furthermore, postmodern architects employed deceptive constructional techniques – purely for the sake of visual effect.[6] Surprising and

irregular shapes, made possible by computerised design, are now in vogue, for example in the Bilbao Guggenheim Museum by Frank Gehry. This kind of design of irregular components, leaning sides and an incomprehensible scale, negates the meticulous detailing of vertical and horizontal steel frames and glass membranes by Mies van der Rohe's New York and Chicago buildings. After postmodernism so-called star architects are inundating cities with sensational novelty. Focusing on six leading contemporary architects: Peter Eisenman, Frank Gehry, Bernard Tschumi, Zaha Hadid, Rem Koolhaas and Steven Holl, Gevork Hartoonian (2013) puts forward a unique and insightful analysis of "neo-avant-garde" architecture. It discusses the spectacle and excess which permeates contemporary architecture.

The purpose of architecture nevertheless remains constant. Besides shelter and the facilitating of life functions it is to afford the participant an experience of discovery. The simplification of facades for the sake of structural purity and of interiors for the sake of functionalism are no longer accepted as criteria of architectural excellence. On the contrary, architects, researchers in the behavioural sciences and urban design experts are at present pleading for more humane and sustainable built environments. We can no longer copy buildings and settings of the past, but we should learn – not from the complex chaos of Las Vegas – but from fundamental criteria by means of which architecture of the past achieved excellence and in which people could fulfil their functional needs and participate in an adventure of discovery. While present-day urban environments are becoming almost completely built-up to the extent that natural features are eliminated, even though they are sometimes reinstated artificially, there is seldom a meaningful dialectic between nature and human design in creating a sense of place. The challenge should be taken up by architects and urban designers to create buildings and cities that are not deadening or overstimulating but of such complexity that they are enriching to the human psyche as exemplified by the group designs of the precinct of Apollo at Delphi and the Athenian Acropolis which embodies a geometrically symmetric order and a random order that are two complementary orders, or a dialectic between order and disorder that creates an organic totality. This can only be achieved if the present mechanical architectural environment we created as our habitat be replaced by an organic one.[7]

The lesson learnt from the examples of processional Classical Greek temple architecture dealt with in this research is that it elicited a response from participants. Public participation in the built environment is only possible if it affords an opportunity for exploration and discovery while affording diverse visual effects, not the unsettling effects caused by forms that confuse our human embodiment and consciousness like the architectural banalities of our own times. It is suggested that modern architects may learn from the best examples of design in architectural history – especially those treated in this research.

Notes

Notes to the text

Preface

1. Rex D. Martienssen, 1956. *The Idea of Space in Greek Architecture: With Special Reference to the Doric Temple and its Setting*. Johannesburg: Witwatersrand University Press.

2. Vincent Scully, Jr., 1962. *The Earth*, *the Temple*, *and the Gods*: *Greek Sacred Architecture*. New Haven: Yale University Press.

3. The following recent publications on Delphi and the Athenian Acropolis are no more than a sample of the large number of meritorious contributions in the field:

   Amandry, P. 1993. Rechesches recentes au Temple d'Apollon a Delphes*,,* *Revue Archeologique*, fasc. : 201-205.

   Beard, Mary. 2003. *The Parthenon*. London: Profile.

   Berger, Ernst (ed.). 1984. *Parthenon-Kongreß Basel: Referate und Berichte*, 4. bis 8 April, 1982, two volumes. Mainz: Philipp von Zabern.

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   Bommelaer, J-F. 1993. Les Portiques de Delphes, *Revue Archeologique*, fasc. 1: 33-52.

   Bruni, Vincent J. (ed.). 1996. *The Parthenon (Norton Critical Studies in Art History)*. New York: W.W. Norton.

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   Neils, Jenifer (ed.). 2005. *The Parthenon from Antiquity to the Present.* Cambridge: Cambridge University Press.

   Hurwit, Jeffrey M. 1999. *The Athenian Acropolis*: *History, Mythology,* and Archaeology from the Neolithic Era to the Present. Cambridge: Cambridge University Press.

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   Tournikiotis, Panayotis (ed.). 1996. *The Parthenon and its Impact in Modern Times*. London: Harry N. Abrams.

Introduction

Propositions

1 Visual satisfaction in urban design is most readily achieved by the placing of buildings in a complex in such a way that the viewer will not be able to take in the totality at a glance from any specific vantage point. By means of movement (implying the dimension of time) through the architectural ensemble a series of impressions of their exterior aspects should be climactically terminated. “serial vision” is a term first used by Cullen (1961: 9) to identify this concept, as follows:

> Concerning OPTICS. Let us suppose that we are walking through a town: here is a straight road off which is a courtyard, at the far side of which another street leads out and bends slightly before reaching a monument. Not very unusual. We take this path and our first view is that of the street. Upon turning into the courtyard the new view is revealed instantaneously at the point of turning, and this view remains with us whilst we walk across the courtyard. Leaving the courtyard we enter the further street. Again a new view is suddenly revealed although we are traveling at a uniform speed. Finally as the road bends the monument swings into view. The significance of all this is that although the pedestrian walks through the town at a uniform speed, the scenery of towns is often revealed in a series of jerks or revelations. This we call SERIAL VISION (author’s capitals).

In the viewing of architecture Doxiadis (1963: 139 and 141) insists that the notion of time is an indispensable dimension of any architectural synthesis, and for the following reasons:

a A normal architectural synthesis is never completed. It is as alive as the people themselves, and it changes with time.

b [T]ime is required for an architectural experience, since, with the abstraction of time, architecture becomes painting or sculpture.

Rapoport and Kantor (1967: 211) suggest that if an architectural environment is such that all the buildings can be taken in at a glance, it implies that ambiguity (see note 4 below) is excluded:

> If there is no ambiguity, the eye is attracted only once and interest is lost. If all is designed and settled, there is no opportunity to bring one’s own values to the forms, and they become extremely simple and quickly grasped.

Bacon (1967: 20) has a similar point of view, but also stresses the affective purpose of architectural design:

> [I]n an architectural composition this effect [of architecture as a series of linked spaces, each possessing a particular quality and each related to the other] is a continuous, unbroken flow of impressions that assault their [the people who use it] senses as they move through it. For a design to be a work of art, the impressions it produces in the participator must be not only continuous, but harmonious at every instant and from every viewpoint.

According to Bacon (1967: 30) architectural design which is purposely done, creates an interrelationship between “apprehension, “representation” and “realisation” in the individual experience of a participant.

Bacon, however, does not use the term "serial vision", but "apprehension" may be interpreted as the first phase in the visual experience of an architectural composition. One may add that the participant's apprehension can only be adequately realised if the experience of the culminates in the viewing of a climactic element or building, like at the temple complex at Delphi and the Athenian Acropolis.

What is termed "serial vision" in this research is termed "sequential form" in urban design by Appleyard, Lynch and Meier (1964: 18). Appleyard explains the term as follows:

> The traditional way of managing a sustained temporal continuity is to set in motion a drive to ward a final goal. This drive may be interrupted, prolonged and embellished at rhythmic intervals, but it never entirely loses forward momentum, and it achieves its destination at the climax, subsiding then to a conclusion with tension resolved. Climax should not be too long delayed, nor should tension, once developed, be thrown away in anticlimax.

In his discussion of Greek architecture Martienssen (1956: 38) refers to the process called serial vision as follows:

> [W]e may regard the architecturally unified city as being significant in providing a sustained pattern of environment which must inevitably have raised the index of visual satisfaction to a new and higher level. What was gained by the contemplation of single isolated objects now assumes a new order of continuity; there is a fulfilment of the sensory faculties that accords with a collectively growing sensibility.

2 The term "worshipper" is used in appropriate contexts, but instead of referring to "spectator", "onlooker", or "viewer" in the discussion of the effect of the visual qualities of architecture, the author subscribe to the term "participant". The idea of "onlooker" implies an unacceptable passivity which contradicts architectural experience, as Doxiadis (1963: 137) points out:

> In the great ages of architecture the notion that architecture implies a time-dimension was always felt, so that the result of the synthesis compelled man to walk through it, to feel and then become a part of a piece of architecture, and not merely to remain outside it as an onlooker.

The judgement of Fitch (1972: 4) seems appropriate: "*In architecture, there are no spectators: there are only participants*" (author's emphasis).

Bacon (1967: 20) substantiates the use of the term as follows:

> I use the word "participator" to designate the person who so senses the flow of messages that are transmitted by a design. The changing visual picture is only the beginning of our sensory experience; the changes from light to shade, from hot to cold, from noise to silence, the flow of smells associated with spaces, and the tactile quality of the surface underfoot, all are important in the cumulative effect.

Furthermore the use of "participant" is deemed especially appropriate in the analysis of serial vision. It is also absolutely relevant in the evaluation of Greek sacred architecture, as at Delphi and the Athenian Acropolis, which were settings for rituals in which selected people participated.

Finally, the term “worshipper” seems archaic because any present-day visitor to Greek temples may also participate in the architectural experience that the classical temple offers.

3 In *Webster’s Third International New Dictionary* (1961), “complexity” is defined as: “the quality or state of being complex”; “complex” being defined as “an association of related things often in intricate combinations”. It follows that there is a relationship between this term and “ambiguity” in the sense that more ambiguous patterns tend toward greater complexity.

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 (1977) who introduced them in his postmodernist handbook, a manifest bearing the title.

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.

Rapoport and Hawkes (1970: 106) summarise the evidence for a theory of complexity, which derives from experimental psychology, as follows:

> [B]oth excessively simple and excessively chaotic visual fields are disliked while complex, allusive design seems to generate the preferred perceptual rate.

Complexity nevertheless is not random but requires some form of pattern, according to Rapoport and Kantor (1867: 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.

Rapoport and Hawkes (1970: 109) suggest that:

> *[T]he notion of building up expectations and then noticeably [departing from them in principle is behind the creation of complexity through the manipulation of variety* (authors’ emphasis).

If the initial grouping of elements or buildings suggests an irregular pattern, then a change of pattern to suggest regularity will introduce the concept of variety – and hence complexity. From this it may be deduced that:

> Homogeneity leads to monotony because there is no direction; movement gets one nowhere. Hence we get contrived differences (“googie architecture”) and a new chaos, and then a new monotony [...]. We need genuine architectural variety – the genuine differences of diversity, which can be combined in different ways by the observer to make a range of “wholes” (Rapoport and Kantor 1967: 217).

4 An essential quality of interesting urban design is visual ambiguity within an open-ended pattern. It is related to complexity, but nevertheless has very distinct characteristics, as explained by Rapoport and Kantor (1967: 210):

> While it is true that in common usage "ambiguous" may also mean vague and unclear, we believe the precedent in scholarship to be for our usage, [...] any visual nuance however slight which gives alternative reactions to the same building or urban group. By its nature, ambiguity thus tends to result in complexity.

Further clarity is offered in the following attempt at a definition by Rapoport and Hawkes (1970: 108):

> [A]mbiguity in the perceptual world is largely a matter of visual illusion. For instance, most examples given by Robert Venturi are of this type: Is this one or two buildings? Is the element larger or smaller? Therefore, this meaning of ambiguity is closer to the common meaning – "doubtfulness, uncertainty", and it is significant that the use of the term "multiplicity of meaning" comes from literature, where associations play a major role. We suggest that the Main aspect of environmental ambiguity is associational, rather than perceptual.

Visual qualities and associational values are complementary and both should be multi-valent to avoid – in Rapoport's (1967: 45) analysis – an environment which has

> *only one meaning,* as opposed to an "unfinished" open-ended setting, an unspecialized one (loose fit one) which can take on many meanings — what in effect I have called an *ambiguous* one... (author's emphasis).

The following hypothesis by Rapoport and Kantor (1967: 220) is clear and subscribed to in the present research:

> [A]mbiguity and complexity are important components of a visually "good" environment because they help to achieve an optimal perceptual rate which is related to richness and complexity of perceptual input, and we have suggested that visual satisfaction is an important aspect of life.

5 According to Robertson (1943: 324 and 335) the earliest building on the site was the late seventh century BCE Treasury of Kypselos, which later became the Treasury of Corinth; the last before Roman times was the Lesche of the Cnidians (*circa.* 468-465 BCE). He also asserts that the fourth-century temple on the site, basically reproduces the plan of its sixth-century predecessor (1943: 145).

Part One

The approach and the Temple of Apollo at Delphi

1 The precinct or sanctuary area at Delphi also includes the theater, which is not taken into consideration in this research.

The use of terms “precinct”, “temenos” and “sanctuary” are somewhat flexible.

Bergquist (1967: 5) defines “temenos” as follows:

> *Temenos* is used as a term to denote the enclosed or otherwise marked off, sacred area permanently assigned to the iterated worship of one or more divinities and the structures of this area.

She explains her choice of terminology:

> I prefer temenos to sanctuary, the last-mentioned word having acquired a too wide and vague meaning.

Kearns (2010: 192) states:

> I use the the word ‘sanctuary’ to translate the relevant occurences of the Greek *hieron* [‘holy’]... . Above all, a sanctuary was, literally, a sacred space – an area of ground set aside as belonging to a deity... . A *hieron* Could also be called a *temenos*, meaning someting ‘cut off’... . But in practice this word (which I have translated as ‘precinct’ often indicates that the sanctuary is quite large... .) *[T]emenos* and *hieron* are contrasted, so that *temenos* here means the whole sanctuary, and *hieron* the area of worskip.
>
> The present author, like Kearns prefer the term “precinct” since the sanctuaries at Delphi and on the Athenian Acropolis are quite large.

2 For the purposes of this research “scale” in Greek sacred architecture is measured by the size of a man. Actually the Greeks measured according to a “module”, but not a “scale”, which Blumenfeld (1953: 37) explains as follows:

> The scale of the classical orders is indeed relative to the entire order, each part growing or shrinking as the whole grows or shrinks, while it is absolute in regard to man.

Blumenfeld (1953: 38) infers that because no temple in classical Greece exceeded the height of 61 feet [approximately 21 metres], it could be taken in at a glance from a 45° angle.

In view of these facts it seems justifiable to relate Greek temples to human dimensions, and ancillary buildings in a temple complex to the scale of the main temple.

3 Neer (2001: 273) defines the *thêsauroi* or treasure-houses as small temple-like structures, built by Greek cities to house the dedications of their citizens.

The following Delphic treasuries are identified by Sakellaridis and Washbrook (1966: 24-29): Sicyonian Treasury (probably fifth century BCE – Doric order); Siphnian Treasury (526 BCE, Ionic order); Theban Treasury (probably 371 BCE); Syracusan Treasury(uncertain); Aeolian Treasury (uncertain); Cnidian Treasury (believed to be the earliest building at Delphi); Potidaea Treasury (uncertain); Athenian Treasury (489 BCE – Doric order); Etruscan Treasury (uncertain); Cyrenean Treasury (uncertain) and Corinthian Treasury (seventh century BCE).

4 See Scully (1962: 112).

5 See Sakellaridis and Washbrook (1966: 26).

6 Martienssen (1956: 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.

7 It was believed that the illustrious Trophonius was swallowed up by the earth and transformed into a god.

See Kostof (1977: 25-26).

8 The following statement by Gutkind (1969: 553) is considered a simplification of the effect of the layout of the environs of the sacred way. It is true only in the sense that "symmetrical" perspective is absent:

> This 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.

9 Stillwell (1954: 5) describes the visual experience of a visitor at the temenos of the Temple of Apollo at Delphi in terms that clearly imply serial vision, 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 no 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.

10 Rapoport and Hawkes (1970: 109) 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.

11 Scully (1962: 112).

12 Gutkind (1969: 551) offers the following explanation for the grouping of the buildings in the temple complex at Delphi, which is irregular and without apparent coordination:

> A rigid and systematic regularity with axial emphasis on the Main buildings was still incompatible with the original conception of a sanctuary as an integral part of the natural environment.

13 Robertson (1943: 100) makes the following point about the Siphnian and Massalian treasuries (the latter in the early temenos of Athena at Delphi):

> In these little buildings, though they lack the Ionic capital, we first meet many of the salient features of the Ionic order: notably base-mouldings round the walls, consoles, the continuous sculptured frieze, and the profusion of carved ornament. In the Siphnian treasury a large astragal ran all round the outside of the wall-base, and also round the inside of the porch... .

14 Martienssen (1956: 130-131) 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.

15 Martienssen (1956: 133).

16 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).

17 Scully (1962: 109).

18 See Norberg-Schulz (1980).

19 According to Gutkind (1969: 551):

The respect for the sacred and animistic essence of Nature, spontaneously and subconsciously transferred to the world of inanimate works created by man in honour of his gods, operated against the restriction of their autonomous independence by deliberate interrelations.

20 The meaning of natural elements in relation to Greek sacred architecture is well expounded by Scully (1962).

21 Norberg-Schulz (1980: 16) explains human being's relationship with a building site as follows:

> [M]an "receives" the environment and makes it focus in buildings and things. The things thereby "explain" the environment and make its character manifest.

A builder makes the structure of the natural environment more precise by visualising, complementing and symbolising it in his buildings. These Norberg-Schulz (1980: 17) calls "relationships", which

> imply that man *gathers* the experienced meanings to create for himself an *imago mundi* or *microcosmos* which concretizes his world (author's emphasis).

22 Scully (1962: 1).

23 This point is made very clearly by Scully (1962: 4) who quotes an anonymous author who says of Delphi that "the layout [...] was complicated by the steep slope of the ground", which is unacceptable to him for the following reason:

> The answer is clearly that the steep slope did not "complicate" the "layout" for the Greek. Instead, it was the occasion for it; it created it.

24 According to Childs (1994: 436):

> Herodotos states in Book 5, 62 that the Alkmeonidai "built out the temple more beautifully than the model required in other respects and, it having been agreed that the temple was to be of limestone, they made the front side of Parian marble." ... [M]arble was used for the orthostases of the cella wall, the paving of the peristasis, part of the architrave, the triglyphs, the cornice and the roof, the columns of the pronaos and the east pedimental sculpture.

25 Gutkind (1969: 553).

26 This point is also made by Gutkind (1969: 551), as follows:

> [T]he arrangement of buildings, altars, and statues was like the grouping of sculptures, each of which had its own individuality and all together formed a man-made extension of the inscrutable variety of nature.

27 The participation of atmospheric qualities in Greek landscape is explained by Bowra (1985: 23) as follows:

> What matters above all is the quality of the light. Not only in the cloudless days of summer but even in winter the light is unlike that of any other European country, brighter, cleaner, and stronger. It sharpens the edges of the mountains against the sky, as they rise from valleys or sea; it gives an ever-changing design to the golds and hollows as the shadows shift on or off them... .

28 Quoted by Blumenfeld (1953: 46). whose translation reads as follows:

> There is need for the regular and for the bizarre, for relations and oppositions, for accidents which give variety to the picture, for a great order in the details, for confusion, for turmoil, for tumult in the whole.

29 According to Rapoport and Kantor (1967: 21) a criterion by which to judge architectural quality is that

> the environment must be open-ended, unfinished to a degree, so that the necessary completions, the expression of many different people, will result in a degree of diversity, and hence complexity and interest, not possible through conscious design.

30 Scranton (1949: 253) makes the following observation:

> The arrangement of the monuments rests on only one logical basis, obvious though it may seem: they are all erected close along some road or path, each so as to attract the greatest possible attention in view of the conditions when it was built. No city, on building a treasury, would have been willing for its monument to serve simply as one element of a group, as a foil or supporting piece for another's dedication. Each was built as well and as richly as the city could afford, and was located as conspicuously as possible. The prime object in its location was to emphasize its individuality. In short, the building is not so much arranged with relation to other buildings as with relation to itself alone, or, practically speaking, to the road near it.

Scranton is basically correct in his observations about the individuality of the treasuries, but neglects to observe the relation of the collection of approach structures to the elevated and most conspicuously placed Temple of Apollo.

31 Zevi (1978: 52) asks how time can be introduced into space, and then quotes Louis Kahn, the architect, as having distinguished between spaces to move through and spaces created for "arrivals" at the end of the movement.

32 This phrase is used by Temko (1952: 165-166) 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".

Part Two

The Panathenaic Way, the Propylaea and the Parthenon on the Athenian Acropolis

1 Referring to what has in recent years been described as "processional streets", Bosanquet (1915: 287) speculates:

> [I]t may well be that they were first laid out as approaches to temples for such processions as that which the Parthenon frieze commemorates. Nevertheless the Athenians were content to make their festal pilgrimage to the Acropolis along a lane – you can walk in it to-day – only 13 feet from wall to wall.

Fehl (1961: 1-44) attempts to reconstruct elements along the sacred way at Athens by close scrutiny of the rocks depicted on the Parthenon frieze.

Bundgaard (1957: 21) explains that in antiquity the approach ramp to the Acropolis and a stair built outside the entrance gate

> Go back to a very primitive road, a path ascending the bare rock, and thus leap back many thousands of years, to a time when there was no thought of creating an artificial road: hat is, to the earliest occupation of the citadel cliff, several thousand years before the birth of Christ.

2 Bosanquet (1915: 287) states:

> Everybody who mattered was in the procession, and the women might see what they could from the housetops.

3 Bacon (1967: 51).

4 Gutkind (1969: 538).

5 Bacon (1967: 53).

6 Scully (1962: 9) describes the mountains that define the landscape of Greece as "of moderate size", and continues:

> Though sometimes cut by deep gorges and concealing savage places in their depths, the mountains themselves are not horrendous in actual size.

Relative to the moderate size of the classical polis, however, the landscape surrounding Athens may be considered vast. See note 7 below.

7 According to Benevolo (1980: 71):

> In 479 BC, Athens, by that time a prosperous and well-endowed city, was destroyed by the invading Persians. Immediately afterwards, Themistocles had a new and more extensive wall built, which embraced the area of approximately 250 hectares... .

Benevolo (1980: 57) furthermore estimates that

> Athens had some 40 000 inhabitants during the political and cultural career of Pericles, who died in 429 BC.

8 Its stylobate measures 30,68 metres x 69,51 metres and the peristyle columns are 10,5 metres high.

9 Burn (1966: 234) describes the bronze Athena Promachos – "the Defender" – as follows:

> Thirty feet high, and sixty from the foot of the pedestal to the tip of the upraised spear, it towered above the neighbouring roofs: the glint of Athena's crest and spearpoint could be seen on a clear day from the ships off Sounion.

10 See note 2, Part One.

11 Scully (1962: 182).

12 The field of vision of a normal person is considered to be 190°.

13 Doxiadis (1963: 138).

14 See note 1, Introduction.

15 Bergquist (11967: 2) makes the point that archaic planning has been misinterpreted as want of a plan, and continues with an argument that also has relevance in the case of classical planning:

> There certainly exists a strong tendency to label a not strictly geometric or a non-geometric arrangement as irregular and to declare it simply irrational, unplanned, and accidental; furthermore to demand certain schemes of age-old prevalence, e.g., axiality, frontality, and symmetry, rigidly formalized, to be present if an arrangement is to be considered planned and designed. We must, however, be prepared to realise that patterns may, of course, exist

> even if they are not rigidly formalized and strictly regular in the geometric sense of the word, but instead informal, whether intentionally or unintentionally, and moreover, that the patterns may be unusual ones , different from those most frequently used and most familiar to us and thus most easily discerned.

16 Scully (1962: 176).

However, it may be noted, as Scully (1962: 176) observes that: "From the slopes of Lycabettos to the north-east it [the Parthenon] stands free against the sea."

The present research is not concerned with the symbolic grandeur of the Parthenon in its command of the landscape, but with the way in which this temple as the main edifice on the Acropolis is viewed from the approach area , even though it is viewed against the sky from the processional way.

17 Scully (1962: 176) states that this interpretation applies to the Parthenon as well as to all peripteral Doric Temples:

> The Parthenon, therefore, as itself the fullest balance between and synthesis of two opposite kinds of architecture [...]: that in which the building is a hollow, female shell, associated with enclosure by the goddess and by the earth, and that in which the building is an exterior, impenetrable presence, associated with the active force of the male standing out against the sky. All peripteral Doric Temples had combined these qualities; the Parthenon pushes each almost to its limits and makes them one. Down to the smallest details, where Doric and Ionic elements are juxtaposed, it embodies the act of reconciliation, and therefore embodies Athena, who was herself both female gentleness and male force, both earth goddess and intellectual will.

18 Yegül (1982: 217) critically reviews recent scholarship on the asymmetrical design of the Propylaea and states:

> Recent scholarship finds the theory of symmetrical design insupportable on archeological and architectural grounds. [...] They contend, however, that [Mnesikles] obviously did want to create the *appearance* of a symmetrical west facade and found a solution by inventing the false front for the southwest wing which successfully hides the irregularity of the porch behind it.

19 For a complete analysis of the planning and construction of the Propylaea see Bundgaard (1957).

20 See Robertson (1943: 120).

21 Doxiadis (1963: 139).

22 “Allusive design” is a term used by Rapoport and Hawkes (1970: 106), quoted in note 3 of the Introduction.

23 According to Plutarch Kallikrates was the co-architect of the Parthenon. However, Carpenter (1970: 111-158) argues that Pericles dismissed Kallikrates from his post of master-builder for the Parthenon and appointed Iktinos to build a larger and finer shrine for the city’s guardian goddess.

According to Williams Lehman (1982: 448)

> Kallikrates [...] appears to have served as Iktinos’s contractor, his technical director of works. Hence the designing architect of the Parthenon was Iktinos.

In his turn, Hurwit (1999: 161-2) speculates:

> Perhaps Kallikrates - whom we today might call a contractor rather than an architect – was chosen [as co-architect of the Parthenon] because of some prior involvement in the construction of the [...] north and south walls.

24 Robertson (1943: 116).

25 Scully (1962: 175) writes:

> [R]ecent tests of perception have shown that almost everyone can perceive six of any given units at once. Most individuals can so perceive seven units. Only the exceptional can perceive eight. The eye is thus always being forced beyond the normal limit of its capacity by the Parthenon’s octastyle facades, and this is a critical matter, since the temple, despite its obviously purposeful evocations of Ionic form, is clearly not intended primarily to be an Ionic grove through which the eye is meant to wander but a Doric sculptural body which demands that it be perceived as one.

It is noteworthy that Scully does not mention the optical corrections to the Parthenon that architectural historians find so important in their quest to explain its perceptual perfection. The authors concur with Scully’s insight that the temple is meant to be “perceived as one”, albeit then with adjustments to elements.

26 Winter (1980: 399).

27 Johnson (1965: 172).

28 Not all sources in this regard can be quoted, but Etlin's (1987: 268-69) discussion of the interpretation of French architects' interpretation of the irregularity of design on the Acropolis is revealing of their groping understanding:

> Through the École Française d'Athènes, the French advanced the heory of the picturesque with the considerations about irregularity in architectural design. At the Acropolis, French architects and classical scholars set about studying the most extraordinary asymmetrical monuments in the history of classical architecture, or perhaps architecture itself, the Propylaea and the Erechtheum. [...] The overall theme that emerged from these studies by the young Prix-de-Rome architects and by their scholarly counterparts at the École Française d'Athènes was the study of order within disorder.

Concerning "irregular symmetry" or the fact that Greek architecture was symmetrical in its parts but asymmetrical in the whole, especially as exemplified by the Propylaea and the Erechtheum, Etlin (1987: 269) quotes Ernest Beulé [*L'Acropole d'Athènes*, 2 volumes, Paris 1853-54: 265] who observed that asymmetry did not necessarily mean irregularity:

> We often hear about the irregularity of the Erechtheum. I confess that I do not understand this any better than that of the Propylaea: unless, by irregularity is meant the absence of that symmetry that the moderns love and that the Greeks seem to have disdained in their ensembles, that is to say, in buildings composed of several blocks.

Etlin (1987: 270) furthermore refers to William M. Leake who stated,

> in his highly respected and widely read *The Topography of Athens* [*With Some Remarks on Its Antiquities*, London, 1821; second edition, 2 volumes, 1841: 177], that the Propylaea "equaled the Parthenon in felicity and execution, and surpassed it in boldness and originality and design".

It is notable that, according to Etlin (1987: 20, note 30), Leake replaced the word "equaled" by "rivaled" in the second edition of his work.

29 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... .

30 Franco (1930-1931: 10).

31 Dinsmoor (1982: 32-33) speculates about the fact that the Pinakotheke could have been symmetrical:

> 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.

32 Hellström (1988: 120).

In a previous article Hellström (1975: 89-92) refutes the symmetrical reconstructions of previous researchers, and offers a dubious solution based on the presupposition that Mnesikles used accurate drawings which would have eliminated any perceptual viewing of the asymmetry of the door and window behind the south intercolumniations.

33 Burkert (1985: 57) describes the manner in which animal sacrifice was executed at a temenos:

> Once the *splanchna* have been eaten and the fire has died down, the preparation of the actual meat meal begins, the roasting and boiling; this is generally of a profane character. Nevertheless, it is not infrequently prescribed that no meat must be taken away: all must be consumed without remainder in the sanctuary.

In a note to this quotation Burkert explains that the formula *ou phora* pertains to the prescription that no meat must be taken away. It is therefore assumed that the meat was consumed at or around the altar of a temenos. No reference could be found to banqueting halls within temple precincts. It is therefore highly unlikely that Mnesikles could have planned banqueting halls on the Acropolis. However at the sacred sites of mystery cults sacrificial meat was consumed in such halls.

34 Coulton (1977: 121-122).

35 Robertson (1943: 128 and 130) gives the following explanation:

> The architect was faced by an extreme irregularity of ground-level, and the local sanctities forbade such drastic measures as those adopted on the Parthenon site. The ground sloped downwards both to the north and to the west. It is likely that some levelling and walling in the various sanctuaries had taken place in the years following the Persian wars, but it is not certain that any roofed buildings preceded the Erechtheum. For the exterior of the new temple, the architect adopted two distinct levels differing by more than ten and a half

> feet. The east and south were at the higher level, not much below that of the Parthenon. This level was in part dictated by the existing substructures of the old Polias temple, and the southern wall and porch of the Erechtheum overlapped the foundations of its destroyed northern pteron. The higher level was continued as a raised terrace for some distance westward from the southern face of the new temple, and also northwards from its eastern face as far as the Acropolis wall. At this south-west corner no external stairway connected the two levels, but to the north-east they were united by a great flight of marble steps... .

36 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, one may note, the same attitude is recognisable in the Erechtheum.

37 The "principle of the second man" is formulated by Bacon (1967: 94) as the man "who [in a group design] determines whether the creation of the first man will be carried forward or destroyed".

38 Dinsmoor (1910: 143) refers to the naive interpretation of the traveler J. Spon who entered the Acropolis in 1676 and beheld directly above him a beautiful building, the Propylaea, which some then regard as the Arsenal of Lycurgus, he states, that, on the contrary: "I am of the opinion that it is a temple because it has a façade and a pediment like others." However, J.R. Wheeler, who accompanied Spon rightly assumed that the building was the Propylaea.

39 See Maré (2008).

40 See Shear (1999: 86-127).

41 Robertson (1943: 127) states:

> For perfection of workmanship this temple has never been surpassed. It was profusely decorated both with carved ornament, and with the studied contrast of black Eleusinian limestone and white marble [...]. The elaboration of the column neckings and capitals is almost unparalleled, and was rejected by the general taste of the following centuries.

42 Robertson (1943: 135).

43 Bruce Allsopp (1970: 15 and 17).

44 Marx (1993: 587) opines:

> When Mnesikles was called upon to provide a new gateway for the Athenian Acropolis, to match the grandeur of the newly finished Parthenon, he created a Propylaia of monumental size and complexity , reflective of the grandiose ambitions of Periklean Athens.

While one may agree with Marx about the complexity of Mnesikles' design, due partly to the irregularity of the site and the intervention of the War, it is my purpose the refute the claim that the gateway matches the main temple in grandeur and refinement.

45 This observation is by Marx (1993: 587).

46 Shoe (1949: 343) gives an account of the application of dark Eleusinian stone and states:

> It was in the next few years after the erection of the Promachos [the colossal bronze statue of Athena set up by Pheidias on a base with a die of dark Eleusinian stone in *ca.*. 460-450 BCE] that Athenian architects discovered several new and quite different possibilities in the use of Eleusinian stone; in fact the widest and most varied use of the material at any time in Greek architecture is by Periclean architects. It would be more accurate, furthermore, to say *a* Periclean architect, for, of the numerous innovations and experiments of that most ingenious of Periclean architects, Mnesikles, none is more indicative of his imagination and his daring than his use of Eleusinian stone.

47 Robertson (1943: 125) states:

> [I]t has recently been proved that the bastion on which the existing temple stands was constructed later than Mnesicles' foundations, and the temple is probably not so old as the bulk of the Propylaea. Attempts to distinguish two periods in its architecture and sculpture seem to be fanciful. An earlier altar has been discovered on the original ground-level.

48 Fletcher (1959) suggests that the site was levelled in order to make the Erechtheum seem more symmetrical.

49 See Shear (1963: 377).

This author also argues that Kallikrates is the architect of the Erechteum. It should, however, be pointed out that since Shear's publication Kallikrates' career has been extensively contested but not finally resolved. It seems, however, that on stylistic grounds the design of Erechteum should be ascribed to Mnesikles, or at least a close collaboration between Kallikrates and Mnesikles because of the latter's "free and ingenious spirit", as Thompson (1937: 53) characterises him.

50 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.

51 Castriota (1992: 135) states:

> As replacements of uncompleted predecessors burned in Cerxes' sack, the new Parthenon and Propylaia were as much a thank-offering to Athena for the eventual victory over the Persians as they were monuments to the success of the Athenian state under Pericles' leadership.

52 As motivation Kitto (1951: 186) may be quoted, who comments on the ramifications of the Greek love of symmetry as follows:

> [W]e find the feeling for pattern and balance wherever we look. We may look first in one or two obvious places. Architecture we have already mentioned; the irregularity of plan displayed by nearly every Gothic cathedral suggests to our minds the idea of dynamic energy; to the Greek mind it would be abhorrent, suggesting only imperfection. The perfect building, executed as conceived, will naturally be symmetrical.

53 One may add that the Parthenon is uniquely homogenous in its construction of unflawed blocks of uniformly white Pentellic marble, and complete with such evolved optical refinements as the entasis of the columns and stylobate curvature, the end result was a fully evolved peripteral Doric temple, even though Ionic elements were subtly incorporated, which, according to Marx (1993: 423), "mirrors in abstract form the spiritual nature of Athena herself, a goddess who embodies both masculine and feminine characteristics."

54 Scully (1962: 185).

55 Bundgaard (1957: 22) refers to traces of deeply-worn hollows left by the continual passage of beasts of burden under the steps of a Roman stair on the Acropolis, and continues:

> They go back to a very primitive road, a path ascending the bare rock, and thus leap back many thousands of years, to a time when there was no thought of creating an artificial road: that is, to the earliest occupation of the citadel cliff, several thousand years before the birth of Christ.

56 Corbett (1970: 152) states that the external appearance of the Erectheum

> is unorthodox and the first reaction might well be to regard it as a unique exception, but we know from Pausanias of other temples with internal divisions to cater for the cult of more than one divinity, though we have no exact details about their architecture; the most we can conclude from this evidence is that Greek architects were ready to adapt a building to its function... .

57 Benevolo (1980: 72).

58 By inference, deductions may be made about the design of other classical Greek temenos areas where the Main Temple is Doric and an Approach area discernable. This lies outside the field of study of this book.

59 Johnson (1965: 168) typifies the essence of architecture as follows:

> Architecture is surely *not* the design of space, certainly not the massing or organizing of volumes. These are auxiliary to the main point which is the organization of procession. Architecture exists only in *time* (author's emphasis).

60 The Parthenon was not the only temple refined by the application of optical corrections. Entasis was a standard practice to correct the illusion that the Doric column "caves in" at the centre. It may, however, be said that the Parthenon represents the extreme refinement of the Doric order.

61 It has been noted that, to appear as a rectangle, the Parthenon consists only of curved lines.

62 Scully (1962: 7).

63 Scully (1962: 2).

64 Stevens (1936: 443-444) 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". Especially at Olympia and Delphi one finds "a jumble of buildings", and he continues:

> The trained architect admires the beauty of the individual buildings of early date, but he calls the grouping of the buildings by the real name – a mess. And he wonders how the ancient Greeks, who were famous for their keen artistic appreciations of all kinds, tolerated such unsightly group planning. Early Greek indifference to formality in group compositions is undoubtedly due to the gradual growth of the sacred enclosures and to the deep respect for holy shrines: the former permitted no well conceived plan of expansion, while the latter forbade radical changes. [...]
> But, there is considerable evidence that even before Hellenistic times the analytic mind of the Greeks felt, that, if their rambling ensembles could be made more orderly, greater beauty would ensue. [...]
> And we shall endeavour to show in what ways these artists succeeded in relating the

> various new buildings one to another, and in thus giving a more orderly appearance to the [Athenian] Acropolis as a whole than has existed before the time of the Persian invasions.

It is the purpose of the present authors to negate such preconceived and uninformed judgements about order and disorder in the total design of classical Greek architectural ensembles.

65 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: 149-58).

Conclusion

Substantiating the propositions

1 The Ionic order originated in Asia Minor, and the Corinthian was a hybrid.

2 Martienssen (11956: 83).

3 Germann (1980: 25) explains the origin, scale and symbolism of the Doric column as follows:

> Wie die Dorer nach Doros, so nannten sich die kleinasiatischen Griechen nach ihrem Führer Ion... . Als die [the Dorians] (dann) bemerkt hatten, dass der Fuss beim Manne der sechste Teil der Körperhöhe war, übertrugen sie dies (massverhältnis) ebenso auf die Säule, und die machten die Säule einschliesslich des Kapitelis sechsmal so hoch, wie sie den Schaft unten dick machen. So begann die dorische Säule die Proportion, die Stärke und die Anmut des Männlichen Körpers an den Templen zu zeigen.

4 Robertson (1943: 118).

5 See Bundgaard (1957).

6 Van Groningen (1964: 53).

The Greek attitude of individualism was, however, not in conflict with the rules of a democratic system, as pointed out by Bowra (1985: 37):

> In aristocracies, with their cult of personal distinction, there was place for a man to win renown by his achievements, but we might expect that democracies would be less tolerant and insist upon some diminution of the old emphasis on individual honour. But in Athens, which is the only democracy on which we are well informed, equality of renown was achieved by assuming that the whole people was capable of behaving in a heroic manner and deserved gratitude and praise when it took advantage of its challenges and showed its superiority.

7 Van Groningen, (1964: 54).

8 Kitto (1951: 252).

In addition, Kitto (1951: 249-50) praised the balance the Greeks found between passion and form:

> The doctrine of the Mean is characteristically Greek, but it should not tempt us to think that the Greek was one who was hardly aware of the passions, a safe, anaesthetic, middle-of-the-road man. On the contrary, he valued the Mean so highly because he was prone to the extremes. [...] The Greek had little need to simulate passion. He sought control and balance because he needed them; he knew the extremes only too well. When he spoke of the Mean, the thought of the tuned string was never very far from his mind. The Mean did not imply the absence of tension and lack of passion, but the correct tension which gives out the true and clear note.

And:

> Finally, we must not forget that the Greeks were southerners. The serenity of Greek art, the poise of the Greek mind, and the safe Greek doctrine of the Golden Mean, encourage perhaps the idea that the Greek was an untroubled and passionless creature; and the idea is perhaps reinforced by conceptions drawn from seventeenth- and eighteenth-century neo-classicism, and conceivably from modern performances of Greek plays... . It is all wrong. Nothing that does not quiver with controlled excitement is Classical Greek... .

9 The Greek word *hieros* (*sanctus* in Latin, originating from *sancire*) means to encircle a specific area. The area inside the enclosure became known as *fanum* or sacred; the outside as *profanum*. See also the discussion of "The Sacred" in Gómez and Van Herck (2012: 3).

10 Pollitt (2000: 222).

11 White (1959: 279-333).

12 Barron (1963: 207-8).

13 This formulation of the concept of organic design in architecture is based on Ho's (1997: 44) formulation of an "organic universe" versus a "mechanical universe." For a description of the latter, see note 7 in the Coda.

Coda

The relevance of Classical Greek design for today

1 Johnson (1965: 169 and 172).

2 Versnel (2011: 149).

3 Maki (1964: 5).

4 See Venturi and Scott-Brown (1968: 36-43).

5 Venturi (1977).

6 See Jencks (1980: 5-19).

7 According to Ho (1997: 44) the "mechanical universe" [a phrase for which "mechanical architectural environment" may be substituted], as contrasted with the "organic universe", is static and determinate; in such a universe space-time frames are universal for all observers; objects are inert with simple locations in space and time; consequently it is experienced as linear and homogeneous, resulting in nonparticipation by the observer.

Notes to the illustrations

Part Three

Sources for the illustrations of the serial movement at the temple precinct at Delphi

All illustrations are reconstructions based on site visits and on the sources listed hereunder:

Martienssen (1956).

Sakellaridis and Washbrook (1966).

Scully (1962).

Part Four

Sources for the illustrations of the serial movement at the Athenian Acropolis

All illustrations are reconstructions based on site visits and on the sources listed:

A Tourist Map of Athens (no place or date).

Bacon (1967).

Douskou (1980).

Collas (1940-1949).

Fletcher (1959).

Giannelli (1970).

Kyriakidis (1971).

Lawrence (1967).

Martienssen (1956).

Scully (1962).

Travlos (1971).

Figure credits

Figure 1 Sakellaridis (1966: foldout: 15).

Figure 2 Sakellaridis (1966: foldout).

Figure 3 Sakellaridis (1966: foldout).

Figure 4 Sakellaridis (1966: foldout).

Figure 5 Sakellaridis (1966: foldout).

Figure 6 Douskou (1980: 6).

Figure 7 Giannelli (1970: 26); Fletcher (1980: 142).

Figure 8 Douskou (1980: 18); Fletcher (1980: 135).

Figure 9 Douskou (1980: 24); Fletcher (1980: 127 and 134).

Figure 10 Douskou (1980: 12).

Figure 11 Travlos (1971: 115).

Figure 12 Sakellaridis, foldout reconstruction of Delphi; the authors have reconstructed a steeper site to attempt to be more in keeping with: Sakellaridis 25; Scully, figures 205, 207, 208, 209 and 210; Giannelli: 248.

Figure 13 Sakellaridis (1966: foldout).

Figure 14 Reconstructed from Sakellaridis (1966: foldout); Scully (1962: figure 205). The existence, position, site and orientation of buildings and artefacts as per Sakellaridis (1966). The detailing is hypothetical. The general maintenance appearance is hypothetical, based on the generally accepted fact of ancient Greece's lack of resources. A corollary of my hypothesis have also been applied regarding he ancient Greeks' mixed attitude of carelessness and scrupulous attention unevenly (or "dynamically") distributed. The note on maintenance also applies to paving (or lack of it). The author has also assumed a constant mixture of repair, renovation, neglect, re-use and "cannibalizing" of older structure.

Figure 15 As for note 14 above; Scully (1962: figure 207).

Figure 16 As for note 14 above; Sakellaridis (1966: 9) for tripod of Platea; Scully (1962: figures 208 and 209).

Figure 17 As for note 14 above. Sakellaridis (1966: 10), for typical area with offerings.
The authors have assumed that, since the area had, at the time reconstructed here, been a shrine for a thousand years, it would have been crowded with offerings; see Sakellaridis (1966: 14). This area, filled with large, fixed memorials (Sakellaridis, foldout) seems a natural area for offerings.

Figure 18 As for note 14 above; Sakellaridis (1966: 15).

Figure 19 As for note 18 above.

Figure 20 Travlos (1971: 1-3, 7, 20, 21, 169-171, 422, 423); Kyriakidis (1971: 320; Giannelli (1971: 25). See Bacon (1967: 56-67), for the significance of the Hephaisteion (Temple of Hephaistus) axis. See Kyriakidis (1971: 392-401), and Giannelli (1970: 41 and 44), for typical houses.

Figure 21 As for 20 above.

Figure 22 Collas (1940-49: frontispiece, plate 30); Travlos, pp. 69 and 71.

Figure 23 As for note 22 above.

Figure 24 As for notes 20 and 21above; Travlos (1971: 511).

Figure 25 Travlos (1971: 198, 200 and 543), for existence, siting, size and shape of buildings. The details are hypothetical.
The existence of dwellings on the right are hypothetical; paving
is also hypothetical. The authors have assumed rough paving, with irregular maintenance and occasional spoliation of materials from older structures.

Figure 26 Travlos (1971: 323-329), for the existence of structures, their size and shape. The detailing is hypothetical.
Travlos (1971: 1 and 8) for the existence of the ancient Agora area on the right. Objects are all hypothetical. For the Propylaea, see note 28 below.

Figure 27 Travlos (1971: 8) for the existence of the palisade and holy precincts in this area. The details are hypothetical. Collas (1940-49: frontispiece).

Figure 28 Kyriakidis (1971: 306); Scully (1962: figure 331). For pathway materials, see 25 above. Memorials are hypothetical, emulating Sakellaridis' suggestions for Delphi.

Figure 29 For structures: Fletcher (1959: 142); Scully (1962: figures 331and 332). The forecourt area seems to pose difficulties and contradictions, further obscured by the presence later of the Boulé gate, Roman flight of steps and the pedestal of Agrippa. See Collas (1940-49: frontispiece); Travlos (1971: 70, 71, 486 and 487); Kyriakidis (1971: 306); Giannelli | (1970: 26); Scully (1962: figures 320 and 321);

Fletcher (1959: 103 and 104).
The author proposes the "rocky Acropolis floor" as a likely possibility. This could be construed as inducing facts to suit argument, but my contention is that what is shown here is more likely than neat or lawned terraces usually indicated.

Figure 30 Fletcher (1959: 142).

Figure 31 Travlos (1971: 69 and 612); Collas (1940-49: frontispiece); Giannelli (1970: 16).
The area has been depicted as being more crowded and disorderly than normal reconstructions indicate, as such liberally interpreting Kitto's (1951) ideas as quoted in the text.

Figure 32 For general detailing, see Travlos (1971: 71); Collas (1940-49: 53); Giannelli (1970: 16).

Figure 33 As for note 23 above.

Figure 34 As for note 23 above; Fletcher (1959: 134).

Figure 35 For the significance of this reconstruction the ideas of Martienssen (1956) were followed. See also Scully (1962: figures 341, 342, 345 and 346); Travlos (1971: 495); Fletcher (1959: 122).

Figure 36 For the significance of this reconstruction the ideas of Martienssen (1956) were followed. See also Fletcher (1959: 122); Lawrence (1967: 159 and 160).

Figure 37 As for note 36.

Figure 38 As for note 36.

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