A DIGITAL RECONSTRUCTION OF VISUAL EXPERIENCE AND THE SEBASTEION OF APHRODISIAS

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Approval of the Graduate School of Social Sciences

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ABSTRACT

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Today, computers enabled architects to represent their ideas in a fast and more efficient way compared to making drawings by hand. It enabled architects to visualize their ideas in a way that hand drawings cannot. This thesis is an attempt to make digital reconstructions to provide the visual experiences of the ancient city Aphrodisias in western Asia Minor and its temple dedicated to divine emperors known as the Sebasteion of Aphrodisias. Its aim is to show that by using common architectural softwares one can overcome the possible problems of graphic representations in the history of architecture. Moreover, this study focuses not only on the interpretations of the data at hand but also demonstrates how the missing information defines and shapes the digital models in order to convey the meaning of the buildings.

Key Words: Digital Reconstruction, Visuality, Aphrodisias, the Sebasteion of Aphrodisias

ÖZ

AFRODİSİAS SEBASTEİON'UNDA GÖRSELLİĞİN SANAL ORTAMDA KURGULANMASI

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Günümüzde bilgisayarlar ve mimari görselleştirme yazılımları mimarlara el çizimlerine nazaran fikirlerini daha hızlı ve verimli yansıtabilme olanakları vermektedir. Bu tezin amacı; batı Anadoludaki Afrodisias antik şehrinin ve kentin kutsal imparatorlara adanan tapınağı Sebasteion'unun bilgisayar ortamında yeniden ayağa kaldırılmasıdır. Calışmanın ana hedefi, sanal ortamda günlük mimarlük yazılımlarının kullanılmasıyla yapılan bu çizimlerin ve görsel iletişim araçlarının mimarlık tarihine etkilerinin tartışılmasıdır. Ayrıca, bu çalışma sadece mevcut olan verilerin yorumunun beraberinde eksik olan verilerin de yapının anlamını kavramada nasıl etkli olduğunu irdeler.

Anahtar Kelimeler: Bilgisayar Ortamında Yeniden Ayağa Kaldırma, Görsellik, Afrodisias, Sebasteion

To my family,

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CHAPTER 1

INTRODUCTION

I have a huge drawing table in my room. I use that drawing table as an ordinary desk and put my computer on it to make drawings but it was bought when my brother started the school of architecture. I remember how that huge table was brought to our apartment; it seemed so interesting to me with its size and angled drawing surface. My brother, who was a freshman at that time, was fascinated with the drawing table without knowing that he was going to spend most of his time in front of that table drawing by hand for hours and hours. Years after that moment when I also started the school of architecture, one of my main concerns was also about finding a proper drawing table at the dormitory I was going to stay. However I remember my sleepless nights of staring at a computer screen while making my drawings on a CAD[1] program, designing a poster on a graphic design software, rendering a 3D drawing on a modeling software, preparing my presentation slides and even writing my papers. In a time period of barely five years, the use of computers even in the architectural education has evolved in such a way that it has almost made drawing tables obsolete.

Computer technology now allows architects not only to store and retrieve information but also to visualize their design ideas in a way that handmade drawings

[1] CAD computer-aided design or CADD computer aided design – drafting.

cannot represent.[2] Through these digital models both the architects and their clients are able to visualize and experience their buildings. Thanks to developments in visualization techniques, clients now have the chance of experiencing their buildings visually within their context on specific times of the day. Moreover these technologies give the chance of creating architectural spaces where users have the chance of experiencing design ideas instantly which will in turn give feedback about different possibilities. The chance of experiencing a design idea without actually constructing it physically may show its advantages more efficiently when compared to a paper-pen sketch. It is possible to create buildings in this virtual environment in various conditions in terms of light, experience of space and motion and more importantly, the possible life-cycle of the buildings[3]. Along with these opportunities, architects are now able to communicate better with people who have no formal education about architecture and who may not understand traditional architectural drawings.

Given that we now have the chance of creating architectural spaces that do not exist in the physical world, why do we not use this powerful tool more to recreate and experience historical buildings, urban patterns and cities? Through these new technologies and the expansion of novel visual possibilities, it is now possible to experience cities and buildings closer to a way that their architects, builders and

[2] For more information about possibilities of computer technologies in architecture see: Tardif, Michael. "Technology and Information Systems." chapter 13 in *American Institute of Architects, The Architect's Handbook of Professional Practice*, edited by Joseph A. Demkin, 373 - 424. New York: John Wilet & Sons Inc., 2001.

[3] As, I., & Schodek, D. (2008). Chapter 1 Architectural Representations. In *In Dynamic Digital Representations in Architecture* (p. 19). London: As, I., & Schodek, D. (2008): Taylor and Francis .

users would have done. Moreover, we can effectively experience different periods of time and also see the evolution process of these buildings and cities.

In view of the fact that we can now create a building or even entire cities in a non-physical medium within their time based phases. We can also recreate the life cycle of a building or a city/site in time-based stages. Yet is it really possible to experience cities and buildings in a way that their architects, builders and users would have done with this technology? Can we indeed reconstruct a building completely and give the observer an idea about how it looked like originally, and demonstrate its transitions, evolutions to convey the meaning of the building in a convincing way?

In my thesis, I will attempt to make a digital reconstruction of the city of Aphrodisias and the Sebasteion of Aphrodisias in order to test and understand better both the advantages and problems of using such a strong graphic communication tool in coming closer to convey and understand how historical buildings were experienced by their users in the past . In doing so, I also hope to broach the pressing question: Can we really get the meaning of the building by making such a model considering the fact that the image can overwhelm the meaning?

CHAPTER 2

APHRODISIAS, CITY OF APHRODITE

2.1. General Background about the City of Aphrodite

The city of Aphrodisias is located in the south-western part of the modern day Turkey. The area was identified as Caria in the known ancient geographical terms. Although the city was connected to ancient seaports like Miletus, Ephesus and Smyrna, it was much more remote and smaller in terms of location and population. One of the most important features of Aphrodisias is that it was located next to a marble quarry which helped the city to acquire an abundance of materials for its buildings and sculptures.

According to the excavation reports, the first known settlements at the site date back to 5800 B.C. the late Neolithic and Chalcolithic periods. In the Classical era, it was considered as a small size settlement rather than a city because the earliest public buildings, the Sanctuary of Aphrodite and the North Agora, are dated as late as the 1st century B.C.[4][5] Until then, it is generally believed that the main building process was primarily limited to housing[6].

[4] Ratté, C. (2001). New Research on the Urban Development of Aphrodisias in the Late Antiquity. (D. Parrish, Ed.) *Journal of Roman Archaeology Supplementary Series* (45), 116 - 147.

[5] For more information see Joukowsky, M. S. (1986). *Prehistoric Aphrodisias, An Account of the Excavations and Artifact Studies, Volume 1 Excavations and Studies.* Providence, R.I.: Brown University, Center for Old World Archaeology and Art.

[6] Until the 2nd and early 1st century B.C. the population of the area was not enough to call the settlement a city. Erim, K. T. (1986). *Aphrodisias, City of Aphrodite.* London: Muller, Blond & White.

The city then draws the attention of Julius Caesar with its dedication to Aphrodite. Since Caesar's family claimed direct descent from Venus[7], this helped Aphrodisias to develop a privileged relationship with Rome herself. Based upon these connections, the city receives a senatorial decree *(senatus consultum)* which grants her freedom, a non-taxable status and increased asylum rights in Aphrodite's sanctuary. Additionally, a former slave of Gaius Julius Octavian, Zoilos, starts one of the most important construction phases of the city upon returning to his native town. Zoilos himself commissioned the northern colonnade of the North Agora, the new Temple of Aphrodite and the stage building for the city theater. Starting with Zoilos' zealous additions to the city, local elites also began to commission public buildings. Until the construction of the Bouleuterion in the early 1st century A.D. however, no new building was added to the "urban space" of the city.[8] Moreover by the mid 2nd century the area between the North Agora and the Theater, which is known as the South Agora, was enclosed with colonnaded porticoes. On the west end of the South Agora, one can see one of the two baths of the city dated to the Early Hadrianic period due to the distinctive decoration of its time; it is known as the Baths of Hadrian in order to clarify any confusion among the two baths[9]. The civil basilica, a basilical hall thought to be used for administrative purposes was located in the SW corner of the South Agora. Besides the construction of these buildings, the Temple of Aphrodite underwent some modifications. First, the temple was enclosed with a colonnaded court having an entrance from the east. Later, another walled-off area

[7] Erim, K. T. (1986). The Site, Its Significance and Historical Background. In K. T. Erim, *Aphrodisias, City of Aphrodite* (pp. 15 - 24). London: Muller, Blond & White.

[8] Certain dating critetira the bouleterion

[9] The other bathhouse is located south of the theater and called Theater Baths.

with porticoes and a large columnar gateway called the Tetrapylon was added to the east of the compound. In addition to these construction projects, two important public complexes were built in the city, namely, the Stadium and the Sebasteion. The stadium was built at the northern edge of the city with two double curved ends which was unusual for its time[10]. When it was first constructed, the stadium had the capacity of around thirty thousand people which was over the estimated population of the city. Welch points out that in addition to its athletic functions, the stadium housed other functions such as processions, imperial cult festivals and public executions[11]. The Sebasteion of Aphrodisias was built at the eastern end of the North Agora and dated to the-2nd century A.D.[12] The Sebasteion faced the North Agora entrance on an East – West orientation; it had strong visual depictions of gods, emperors, nations of Rome, mythological figures and the world order that emerged under the imperial family in Rome.

In the mid-3rd century, as mentioned by Erim and Ratté, nobles of the city invested in their own private housing rather than commissioning new public buildings, except for repairs and restorations. However, a general political crisis in the mid-3rd century had an interesting and direct impact on Aphrodisias. The city becomes the capital of a new province called Caria[13]. In this era, from the mid-3rd to

[10] Ratté, C. (2001). New Research on the Urban Development of Aphrodisias in the Late Antiquity. (D. Parrish, Ed.) *Journal of Roman Archaeology Supplementary Series* (45), 116 - 147. and Welch, K. (1998). The Stadium of Aphrodisias. *American Journal of Archeology , 102* (No. 3), 547 - 569.

[11] Welch, K. (1998). The Stadium of Aphrodisias. *American Journal of Archeology , 102* (No. 3), 547 - 569.

[12] Smith, R. (1987). The Imperial Reliefs from the Sebasteion at Aphrodisias. *The Journal of Roman Studies , 77*, 88 – 138 and Smith, R. (1988). Simulacra Gentium: The Ethne from the Sebasteion at Aphrodisias. *The Journal of Roman Studies , 78*, 50 - 77. however Esen Öğüş noted that the Sebasteion belongs to Julio-Claudian era which means that the date of the building is 1st century A.D.

[13] Erim suggests that the name of the present day village Geyre is a derivative of the word Caria.

the mid-4th century, the only notable progressive construction project one can see is the construction of the city walls. These city walls date to the late 4th century even though the Gothic invasions of the 3rd century proved that the city needed a defensive structure. However it is interesting that according to both Ratté and Liebeschuetz the prosperity of the city did not diminish during this time. [14] Therefore one might suggest that this was a sign of prosperity rather than a defensive need due to an invasion or unrest. In addition, as a result of the amount of the *spolia* used in the city walls from various buildings of the city, Erim suggests that a devastating earthquake might be associated with the construction of the city walls[15]. On the other hand, by examining the *spolia* block types, Staebler points to an interesting change in the city's image and claims that Aphrodisians sacrificed a considerable part of the city monuments and more than 2000 monumental tombs in order to make their city more secure.[16]

Along with the construction of the city walls, the eastern end of the stadium was converted into an arena by constructing a curved wall enclosing a circular area which had a seating capacity of 5000 persons [17]. In the 5th century A.D., the sanctuary of Aphrodite was converted into a church in a dramatic way by using the temple's own materials to construct the converted building. By dismantling and using almost every building component of the temple, literally turning the temple

[14] Liebesschuetz, W. (1992). The End of the Ancient City. In J. Rich (ed.), *The City in the Late Antiquity* (pp. 1 - 49). London: Routledge. p 4 -5

[15] Erim, K. T. (1986). History of Aphrodisias. In K. T. Erim, *Aphrodisias, City of Aphrodite* (pp. 25 - 37). London: Muller, Blond & White.

[16] Staebler, P. D. (2008). Re-use of Carved Marble in the City Wall. In R. Smith, & J. Lenaghan (Eds.), *Roman Portraits from Aphrodisias* (p. 185 199). İstanbul: YKY.

[17] Welch, K. (1998). The Stadium of Aphrodisias. *American Journal of Archeology , 102* (No. 3), 547 - 569.

"inside out", Christians now had their huge "cathedral" twice as big as the temple of Aphrodite. Although there is some dispute about what happened between the mid-5th and 7th century,[18] adding up the stage wall of the theater to build a fortress may show us that there was a dramatic change in the population of the city. The city shrunk back to the same population-size at the same spot where it had started out but with a church instead of a temple. Aphrodisias was now called Stavropolis, the city of the cross, rather than the city of Aphrodite.

The settlement survived and was documented in different periods on engravings, drawings and numerous travelers' accounts. But most importantly, the Director General of the Imperial Museum in İstanbul wanted to launch an expedition to the site in 1892; [19] yet the expedition could not take place due to financial and logistical reasons. In 1904, Paul Augustin Gaudi, a French railroad engineer, started the first known excavations in Aphrodisias. Regrettably, he had the chance to work on the site formally only for two years. His main focus was the Hadrianic Baths and the Temple of Aphrodite. Unfortunately Gaudin was appointed to the Hejaz railroad project and the excavations stopped. In 1937, an Italian mission worked and studied at the site for only a year when some parts of the Ionic porticoes of the Agora were unearthed[20]. Due to political tensions between Italy and Turkey, the Italian team could only work at the site for a year and their archaeological results were published

[18]It is not known whether a change in the water level, earthquakes and invasions were instrumental.

[19] Erim, K. T. (1986). History of Aphrodisias. In K. T. Erim, *Preface* (pp. 9). London: Muller, Blond & White.

[20] Garlanded masks and frieze blocks from Portico of Tiberius.

in 1939 just before the break-out of the Second World War. Until 1959[21], when Kenan Erim arrived at Geyre village for the first time

> *…on a hot July afternoon, almost twenty five years ago, a battered jeep station-wagon laden with luggage, equipment and a handful of enthusiastic but weary young archeologists, made its way painstakingly through the dusty back roads of south-western Turkey.*[22]

In 1961 excavations began under the aegis of New York University. The current studies are directed by Professor R.R.R Smith (Oxford University) with Esen Öğüş (Institute of Fine Arts, New York University) as Assistant Director.

2.2. The Sebasteion of Aphrodisias

In the aftermath of recent excavations and geophysical surveys in the city, it has now become rather easy to infer that the City of Aphrodisias had a grid plan. Almost every building in the city was aligned in accordance with this orthogonal system and the city center was defined in the middle of all the public buildings. According to Ratté, the city centre was bordered by four major streets and the most important one was the street running at the N-S axis from the Tetrapylon to the Theater[23]. On this alignment one can see six important buildings of the city: The Sanctuary of Aphrodite, North and South Agoras, The Sebasteion, Theater and the Theater Baths. However the Sebasteion draws attention on this aligned orthogonal

[21] Even though the excavations started in 1961, his initial arrival and the survey of the site was in 1959.

[22] Erim, K. T. (1986). Preface. In K. T. Erim, *Aphrodisias, City of Aphrodite* (pp. 9). London: Muller, Blond & White.

[23]Ratté, C. (2001). New Research on the Urban Development of Aphrodisias in the Late Antiquity. (D. Parrish, ed.) *Journal of Roman Archaeology Supplementary Series Number 45* , 116 - 147.

city pattern with its conspicuous angled position. It was not aligned with any other known building of the city[24].

This building complex consisted of four components: a propylon, monumental gateway, two porticoes and a temple. The propylon is situated along the wide N-S oriented street facing the entrance of the North Agora. The existing situation of the propylon consists of podium blocks and three staircases where one can step up to a higher level than the street. Small segments of the North and South Porticoes also face the street and unify the propylon with the porticoes. Two porticoes located at the North and South of the building escort the viewers to a processional road which leads to a temple dedicated to *Sebastos*[25].

Coin evidence and inscriptions on the building components show that the Sebasteion dates back to the 2nd century[26] when the city had a wide-ranging construction activity. This building activity was commissioned by two rich families of Aphrodisias. The North Portico and the Propylon were commissioned by two brothers, Menander and Eusebes, with Eusebes' wife Apphias, and *"dedicated to*

[24] Erim, K. T. (1986). Recent Discoveries. In K. T. Erim, *Aphrodisias, The City of Aphrodite* (pp. 103 - 126). London: Muller, Blond & White.

[25] *Sebastos* is the Greek equivalent of the Latin Augustus. See Erim, K. T. (1986). Recent Discoveries. In K. T. Erim, *Aphrodisias, The City of Aphrodite* (pp. 103 - 126). London: Muller, Blond & White. see also Smith, R. (1987). The Imperial Reliefs from the Sebasteion at Aphrodisias. *The Journal of Roman Studies , 77*, 88 - 138.

[26] Ratté, C. (2001). New Research on the Urban Development of Aphrodisias in the Late Antiquity. (D. Parrish, Ed.) *Journal of Roman Archaeology Supplementary Series Number 45*, 116 – 147. According to the comments of Dr. Öğüş during the thesis jury, it is possible that the Sebasteion may be dated to the Julio-Claudian period around Nero and finished in the late 1st century A.D.

Aphrodite, the Theoi Sebastoi and the Demos"[27]. On the other hand, the South Portico and the Temple were commissioned by two brothers, Diogenes and Attalus[28].

The Propylon consisted of two storeys, in the Ionic and Corinthian styles respectively, with sculptural additions in between the columnar axis. Thanks to the information gathered from the surviving sculpture bases, even though we do not have the sculptures themselves, we do have a fairly good idea about the location of the statues. It is thought that these sculptures were moved to the Byzantine fortification system in the 7th century and reused there.

When looking at the two porticoes, even though they comprise similar components of the overall building, they stand quite apart from each other with their different architectural and sculptural features. Firstly, along the length of these almost 90m long porticoes, intercolumniations were different on both sides. In the North, the intercolumniation consisted of a single width, in contrast to the rhythmic system going on at the South Portico. In the latter, *a module of a room* consists of one wider intercolumniation in the middle and two narrower ones at the sides. Both porticoes were also at different heights and architectural detailing. This difference might have the intention of creating an efficient construction site[29] or it is simply

[27] Smith, R. (1987). The Imperial Reliefs from the Sebasteion at Aphrodisias. *The Journal of Roman Studies , 77*, 88 - 138. On the other hand, Erim translates this as "*to Aphrodite, "the Divine Augusti and the People" in* Erim, K. T. (1986). Recent Discoveries. In K. T. Erim, *Aphrodisias, The City of Aphrodite* (pp. 103 - 126). London: Muller, Blond & White.

[28] Erim, K. T. (1986). Recent Discoveries. In K. T. Erim, *Aphrodisias, The City of Aphrodite* (pp. 103 - 126). London: Muller, Blond & White. And Reynolds, J. M. (1996). Ruler-cult at Aphrodisias in the late Republic and under the Julio-Claudian Emperors. In A. Small (ed.), *Subject & Ruler: The Cult of the Ruling Power in Classical Antiquity* (pp. 41 - 50). and Smith, R. (1987). The Imperial Reliefs from the Sebasteion at Aphrodisias. *The Journal of Roman Studies, 77*, 88 - 138.

[29] Even though we do not have any written evidence about this idea, the suggestion developed during the ongoing anastylosis projects to find out which architectural block belongs to which portico.

because both porticoes had a different set of relief compositions. Although very few reliefs of the North Portico have survived, we have an idea of the composition at the north. We know that there were a series of allegorical figures personifying elements of time and space[30], such as the personifications of the Day and the Ocean, and *ethnos* reliefs[31]. On the other hand, possibly because the South Portico collapsed at a later date and the fragments of the building were not used as *spolia*, we have a larger reflection of the South Portico in its entirety. On the second storey of the building, we can observe a sequence from Greek mythology like Leda and the Swan, Demeter and Triptolemus, Bellerophon and Pegasus… On the third storey of the building we see the Roman Emperors depicted with the themes of imperial victory, the divine emperors and the gods. The entire ensemble visualizes and concretizes the new world order governed by Rome to its viewers. As Ratté has pointed out[32], in view of the fact that the first storeys of both the porticoes had no function with their small unconnected rooms, the users most probably did not have much to do inside the alley except walking up and down along *the street*. Moreover when looking at the dimensions of the porticoes (20m height and 90m length approximately) and the 14m wide processional way separating them, the three main components of the Sebasteion create a closed effect[33] which overwhelms the viewers while leading them to the

[30] Smith, R. (1988). Simulacra Gentium: The Ethne from the Sebasteion at Aphrodisias. *The Journal of Roman Studies , 78*, 50 - 77. See also, Smith, R. (1987). The Imperial Reliefs from the Sebasteion at Aphrodisias. *The Journal of Roman Studies , 77*, 88 - 138.

[31] These include the depiction of nations and provinces conquered by the Julio - Claudian family.

[32] Ratté, C. (2002). The Urban Development of Aphrodisias in the Late Hellenistic and Early Imperial Periods (Leuven 2002), 5-32. In C. Berns, *Patris und Imperium : Kulturelle und Politische Identität in den Städten der Römischen Provinzen Kleinasiens in der frühen Kaiserzeit* (pp. 5 - 32). Leuven: Peeters Publications & Booksellers.

[33] Lynch, K. (1960). *Image of the City*. Cambridge, Mass.: The MIT Press. and Rasmussen, S. E. (1964). *Experiencing Architecture.* Cambridge, MA: The MIT Press. and Rasmussen, S. E. (1964). *Experiencing Architecture.* Cambridge, MA: The MIT Press.

Temple dedicated to Augustus and his family. As far as we know, the temple was a Roman style podium temple in the Corinthian order[34]. This means that the whole magnitude of the façade welcomed the viewers approaching from the processional gateway. Unfortunately a considerable part of the excavation compound and the platform for the tourists to view the Sebasteion are on top of the Temple area now and obscure this perception. In terms of experiencing the building, it is possible to say that this kind of experience can be defined as a linear movement. In this respect, As and Schodek claim that the "linear movement gives the viewer an awareness of bodily motion through passage, rhythm and time"[35].

During the conversion of the city to Christianity in the 5th century, the Sebasteion and its pagan depictions received their share from the defacing of pagan monuments. Even though we do not know that the North Portico survived that long to undergo a similar modification, it is known that the North Portico collapsed with an earthquake and most of its materials were re-used in the city walls. However in the South Portico we can clearly see that the pagan deities and sacrificial depictions were chiseled out from the reliefs and the portico was turned into an axial market-like function. Moreover, since the Temple also lost its function with this new religion it was dismantled to pieces and converted into workshops[36].

[34] Smith, R. (1987). The Imperial Reliefs from the Sebasteion at Aphrodisias. *The Journal of Roman Studies , 77*, 88 - 138.

[35] As, I., & Schodek, D. (2008). Chaper 3 Motion Paths in Architecture. In *Dynamic Digital Representations in Architecture* (p. 42). London: Taylor and Francis .

[36] Ratté, C. (2001). New Research on the Urban Development of Aphrodisias in the Late Antiquity. (D. Parrish, Ed.) *Journal of Roman Archaeology Supplementary Series Number 45* , 133.

In 1979, archeologist Şükrü Tül started to work on his Yakup-79 trench[37]. Even before excavations started, during the cleaning and dismantling of the house on top of the trench, Tül and his workers encountered an abundance of reliefs and sculptural fragments[38]. At the time, when they also found a portico with Doric columns, they initially thought that they found a street or an extension of the North Agora. Later on with the reliefs and the inscriptions found at the trench, it was understood that there was a building underneath and the building was dedicated to the Imperial Cult. The Sebasteion of Aphrodisias had an extensive excavation phase from 1980 to 1988. Nowadays an anastylosis[39] project of the East Corner of the South Portico is about to be finished. Most of the surviving reliefs of the Sebasteion can now be seen at the site museum.

As mentioned above, the Sebasteion draws attention with its location in the city. Six major buildings of Aphrodisias: the Sanctuary of Aphrodite, the North and South Agoras, the Sebasteion, Theater and the Theater Baths, were all located along the same N-S axis street which possibly constituted one of the thoroughfares in Aphrodisias. Some might say that by looking at the position of the building at the center of the street mentioned above, the Sebasteion was one of the important elements of the city. Even though the function of the building was fully external to the viewers, as far as we know, it did not have any function except paying homage to

[37] The name of the trench was the name of the house owner they were dismantling in order to start the excavation.

[38] Erim, K. T. (1982). A New Relief showing Claudius and Britannia from Aphrodisias. *Britannia , 13*, 277 - 281. and Erim, K. T. (1980). Afrodisias 1979 Çalışmaları. *2. Kazı Sonuçları Toplantısı. I*, pp. 37 - 39. Ankara: TC. Kültür Bakanlığı Eski Eserler ve Müzeler Genel Müdürlüğü. and Erim, K. T. (1980). Afrodisias 1980. *3. Kazı Sonuçları Toplantısı* (pp. 21 - 24). Ankara: Erim, K. T. (1980). Afrodisias 1979 Çalışmaları. 2. T.C. Kültür Bakanlığı Eski Eserler ve Müzeler Genel Müdürlüğü.

[39] An archaeological term for a reconstruction technique whereby a ruined building or monument is restored using the original architectural elements to the greatest degree possible.

the gods and emperors[40]. Therefore one might suggest that the Sebasteion was conceived as a prominent landmark or a node[41] in the urban pattern of Aphrodisias[42].

In addition to its importance in the urban layout of the city, when considered on the larger scale i.e. the cities in Asia Minor, one can see that there is a cornucopia of buildings, temples and altars, dedicated or somehow related to the Imperial Cult. According to Price, in a study made as early as the 1980s, there are 77 recorded temples or sanctuaries dedicated to the imperial cult in Asia Minor alone[43] and the Sebasteion of Aphrodisias is one of these 77 buildings. As Zanker has pointed out, a city which had a temple or altar dedicated to the emperor himself was an opportunity to convey local allegiance and establish a connection with the emperor and the imperial family. By doing so, cities acquired some privileges and honors from the emperor himself which helped them to stand out one step further from their rivals in this competition[44]. However we need to understand why this particular building in Aphrodisias may be distinguished from the other imperial cult buildings in the region not only with its architectural and sculptural features but also with its context and importance in the urban pattern.

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[40] Except shopping function later added on in late antiquity. Ratté, C. (2001). New Research on the Urban Development of Aphrodisias in the Late Antiquity. (D. Parrish, Ed.) *Journal of Roman Archaeology Supplementary Series Number 45* , p. 133

[41] Lynch, K. (1960). The City Image and Its Elements. In *Image of the City* (pp. 46 - 90). Cambridge : The MIT Press.

[42] In this thesis, the argument of whether the Sebasteion of Aphrodisias was a landmark or a node will be studied in the upcoming chapters.

[43] Price, S. (1984). Gods and Emperors: the Greek Language of the Roman Imperial Cult. *The Journal of Hellenic Studies , 104*, 79 - 85. and Price, S. (1985). *Rituals and Power The Roman Imperial Cult in Asia Minor.* Cambridge, Great Britain: Cambridge University Press.

[44] Zanker, P. (1990). The Roman Empire of Augustus: Imperial Myth and Cult in East and West. In *The Power of Images in the Age of Augustus* (A. Shapiro, trans., pp. 302 - 307). Ann Arbor: The University of Michigan Press.

One of the most important aspects to consider regarding the importance of the building is its location. It is located in the city of Aphrodisias which claimed direct descent from the goddess Aphrodite. In addition, the Julio-Claudian dynasty also claimed that they were descendants of the same goddess who had helped Aphrodisias to obtain some privileges in the 1st century A.D. In view of the fact of this specific positive relationship with Rome, the Sebasteion had a rather different function compared to Augustan temples with *Res Gestae Divi Augusti* inscriptions on their walls[45]. We can see that the building was commissioned by the local elites rather than being funded by Rome or the city council. As mentioned earlier, the reliefs were about cosmos, ethnos, mythological scenes, gods and emperors. Therefore it is possible to say that the citizens of Aphrodisias were celebrating not only their relative's triumph and succession to the imperial throne but also her new status in the Roman pantheon among the other gods. Moreover with nations of Rome all visualized in unity within the new world order under the Roman emperors was a visual depiction of this peace and order rather than a written dictation.

Furthermore, when looking at other buildings dedicated to the Imperial Cult, most of the buildings were altars or only temples on an elevated ground[46]. In contrast, architectural elements of the Sebasteion display their intention not only with a temple dedicated to the imperial cult but also with a story-telling function with two porticoes. Reliefs carefully combined with the architectural elements suggestively make us think that the whole relief composition was not only a depiction of a new

[45] Güven, S. (1998). Displaying the Res Gestae of Augustus: A Monument of Imperial Image for All. *Journal of the Society of Architectural Historians , vol. 57* (1), 30 - 45.

[46] Price, S. (1985). *Rituals and Power The Roman Imperial Cult in Asia Minor*. Cambridge, Great Britain: Cambridge University Press.

era but also a show of Aphrodisian sculpture workshops and their capabilities[47]. If we also keep in mind the dimensional properties and orientation of the building, it can be seen that the reliefs and the architecture together created an inspirational alley with its rhythm, scale, textural, illumination, color and even sound effects, leading to the temple. Although there are missing reliefs from the porticoes, it is still possible for us to reconstruct a visual imagery of the Sebasteion within the city context. In this way, we could attempt to visualize the building like an ancient visitor had experienced it. With this digital reconstruction, the impact of the reliefs and the architecture, and what the two families of Aphrodisias wished to express to their contemporaries may become clearer.

[47] Smith, R. (2008). Sculptors' Workshops: Inscriptions, Images and Archaeology . In R. Smith, & J. Lenaghan (Eds.), *Roman Portraits from Aphrodisias* (pp. 103 - 119). İstanbul: YKY. and Rockwell, P. (1990). Finish and unfinish in the carving of the Sebasteion. *Journal of Roman Archaeology Supplementary Series* (1), 101 - 118.

CHAPTER 3

DIGITAL MEDIA & DIGITAL RECONSTRUCTION

3.1. An Introduction to Digital Media

On July 3, 1976, the Israeli Defense Force (IDF) stormed the Entebbe airport, Uganda, to finish a hostage crisis. When one looks at the date of the event, it does not take a genius to foresee that someone would hijack an airplane, make some demands and some would try to solve the crisis with brute force. IDF attacked the main airport building to rescue 103 hostages and killed all hijackers losing only one soldier and three hostages[48]. It was a remarkable achievement for IDF to rescue so many in an effective way with so few losses. Besides its importance in the history of military operations what is really important for us to see here is how the Israelis trained their assault team and how this military training technique gave birth to multimedia.

This successful attack was based on an intensive military training by using a mock-up model of the whole airport where Israelis were able to practice any situation they might encounter during an actual operation. Furthermore, the operatives of the task force had the spatial and experiential sense of the place even before they stepped on any possible hostile ground. The US army was impressed with the efficiency of the operatives and they decided to assign the Advanced Research Projects Agency (ARPA) to reconstruct any conflict and potential operation zone digitally in view of

[48] Smith, T. (1976). *Hostages Freed as Isrealis Raid Uganda Airport.* New York: the New York Times.

the fact that it was more economic and easy to execute in a digital medium when compared to the actual construction of every possible conflict zone. As mentioned by Negroponte, who was also a part of the US research team, Americans created a complete digital reconstruction of Aspen, Colorado which was deemed "*the birth of multimedia".*[49] In the Aspen Project, the main purpose was to recreate and experience the whole town before going to Colorado. You could walk the streets, drive your car, get into the buildings and have conversations with the people around. Moreover, the research team added the time factor where one could have these experiences of the town in different seasons of the year or how the buildings looked like forty years ago[50]. In architectural animation techniques, the time factor is regarded as the fourth dimension of the modeling which is crucial to understand every aspect of the project.

Even though the reconstruction process seems a little different than actual daily architectural production, the main emphasis of the project was similar; the idea of being there, by at least in a visual perception, obtained by angular movement, brightness, relative size and time perception.

Yet in 1991, graphical representations in architecture with digital media were not sufficient enough to create an effect of reality. Except for some repetitive patterns on buildings, it was really hard to make a three-dimensional model of a building or an interior view. By designing various new graphic softwares, designers were able to visualize colors, texture effects, perspective and materials.

[49]Negroponte, N. (1995). Birth of Multimedia. In *Being Digital* (pp. 65 - 67). London: Hodder and Stoughton.

[50] Negroponte, N. (1995). 20/20 VR. In *Being Digital* (pp. 116 - 126). London: Hodder and Stoughton.

Unfortunately creating a digital image with all the aspects mentioned before they needed a super computer rather than the computers used in a daily life. Even though they had limited technology at hand to create a photo realistic image to express the designer's ideas, critics, software developers and architects were well aware of its possibilities by saying that it promised a lot in the future of architecture[51].

In daily architectural production, computer technologies help architects in different aspects. Besides the several advantages of graphical communication, computers help to calculate a quantity survey in a shorter amount of time, facilitate communication with different parts of the design team in a fast and efficient way by eliminating the distance of the teams to each other. Moreover movement of data for the projects can be transferred via the World Wide Web rather than huge dossiers or drawing tubes. As mentioned before, it almost made the drawing almost obsolete by allowing the architects to visualize their ideas that only exist in the designer's mind.

3.2. Similar Projects

Before attempting to begin the modeling process of Aphrodisias and the Sebasteion, it is vital to inspect other similar case studies to understand how different urban patterns and buildings were conceptualized. For example; the UCLA ETC center[52] is one of the leading institutions in terms of digital reconstructions. Current studies are conducted under the Cultural Virtual Reality Lab (CVRlab) with the directorship of Diane Favro. Some of the important studies carried out in the CVRlab have not only focused on sections from Rome but also Incan palaces, the church of

[51] Greenberg, D. (1991). Computers and Architecture. *Scientific American* (264), 104 - 109.

[52] *UCLA Experiential Technologies Center*. (n.d.). Retrieved March 30, 2011, from UCLA ExperientialTechnologies Center web site: http://www.etc.ucla.edu/

Santiago de Compostela, and a modernist house by Richard Neutra[53]. CVRlab models are important in terms of setting some standards of realism in digital reconstructions. The main idea is to make digital models that visualize and represent to the viewer's eye "the current state of knowledge" rather than a hyper-realist depiction of reality. Moreover, besides the modeling process, the recreation of the possible experience of the buildings with various factors such as lightscape, movement, scale and even sound is another important aspect of these studies.

Some of the other recent and interesting relevant studies are: The Digital Michelangelo Project at Stanford University, [54] the CyArk 3D Heritage Archive[55], Digital Anastylosis of the Octagon in Ephesos[56], the city of Troy[57], Digital Reconstruction of a Historical Kabuki Theater[58] and making a model of Rome in a day with tourist photographs taken in Rome and shared via the Word Wide Web[59].

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[53] Favro, D. (2006). The Digital Disciplinary Divide: Reactions to Historical Virtual Reality Models. In D. Arnold, E. A. Ergut, & B. T. Özkaya (Eds.), *Rethinking Architectural Historiography* (pp. 200 - 214). New York: Routledge. see also *UCLA ExperientialTechnologies Center*. (n.d.). Retrieved March 30, 2011, from UCLA Experiential Technologies Centerweb site: http://www.etc.ucla.edu/

[54] Koller, D., Frischer, B., & Humphreys, G. (2009). Research Challenges for Digital Archives of 3D Cultural Heritage Models. *Journal on Computing and Cultural Heritage (JOCCH) , II* (3), 1 - 17.

[55] The CyArk is a recent effort to create an online Internet-based repository. For more information see *CyArk*. (n.d.). Retrieved May 2011, 01, from http://archive.cyark.org/

[56] Thuswaldner, B., Flöry, S., Kalasek, R., Hofer, M., Huang, Q.-X., & Thür, H. (2009). Digital Anastylosis of the Octagon in Ephesos. *Journal on Computing and Cultural Heritage (JOCCH) , II* (2), 1 - 27.

[57] Brandau, B., Schickert, H., & Jablonka, P. (2010). *Resimlerle Troya*. (Ü. Türkoğulları, Ed., & A. Kanat, Trans.) Ankara: Arkadaş Yayınevi.

[58] Furukawa, K., Akama, R., Hirose, C., & Hachimura, K. (2009). Digital Reconstruction of a Historical Kabuki Theater. *2009 Fifth International Conference on Intelligent Information Hiding and Multimedia Signal Processing*, (pp. 1160 - 1163).

[59] Agarwal, S., Snavely, N., Simon, I., M.Seitz, S., & Szeliski, R. (n.d.). *Building Rome in a Day*. Retrieved October 10, 2010, from the Graphics and Imaging Laboratory of the University of Washington's Department of Computer Science and Engineering. : http://grail.cs.washington.edu/rome/ see also Agarwal, S., Snavely, N., Simon, I., M.Seitz, S., & Szeliski, R. (2009). Building Rome in a Day. *International Conference on Computer Vision.* Kyoto.

One of the most striking features of these examples is that they are not stuck or obsessed with only one time-era or geographical location.

On the other hand, it is also possible to find an abundance of reconstruction drawings in various media for tourists, graphic artists or entertainment industries.[60] However, without a scientific basis, these images cannot go beyond the fictional projections of an imagined past. Despite the fact that images created with the purpose of entertainment might have some anachronisms, these images and studies would help the viewers to perceive the missing aspect of architectural reconstructions. They could also help to understand the socio-political context of the recreated era and area.[61] Therefore, it is important to keep in mind that even though there may be flaws and mistakes in the imagery created for entertainment purposes, it is possible to say that some information or technique would be useful for us to get us closer to understand the meaning inherent in buildings of the past.

3.3 Aims of the Models of Aphrodisias and the Sebasteion

Given that designers now have the chance of creating spaces that do not exist in the physical world one might start wondering whether it is possible to reconstruct a building or an urban pattern with the information at hand. As previously stated in the Introduction, I will try to reconstruct the Sebasteion of Aphrodisias and the city itself via daily used architectural programs. However one has to know that when designers start talking about computer modeling, most of the time they end up saying that "there are x ways to model y". In this kind of statement "x" defines a positive

[60] Such as movies, TV series computer games.

[61] For an interesting approach see Handa, R. (2010). Using Popular Film in the Architectural History Classroom. *Journal of the Society of Architectural Historians , 69* (3), 311 - 319.

integer mostly around twenties and "y" defines an object nearby, possibly on the table where the designers are having the conversation[62]. Therefore we have to set up some parameters and basic notions even before modeling the city and the Sebasteion.

In order to understand the Sebasteion within its context and the urban pattern of Aphrodisias, we have to make a model of the whole city with its landscape. One of the purposes of making the model of the landscape of the city and its vicinity is to experience the city in an urban context. For instance, Pompeii is a great example for us to demonstrate that even in the days of Early Roman Architecture, the ancient architects were after not only a building in the city but also creating an urban pattern. As Kostof points out, the civic centre of Pompeii had two major Roman features: axial organization and total enclosure. However, one of the most important aspects about the modifications in the forum of Pompeii is that there was the purpose of creating a feel of a single master plan so that different buildings from different periods could be perceived within a whole[63]. Moreover as MacDonald states:

> *No building stood alone, not only because of the simple fact of urban density but also because of formal and symbolic connections with other buildings and their common purpose of framing and accommodating town life...*[64]

Above all, this was one of the fundamentals Roman architecture: taking urban settlements within context as a whole in every aspect of architecture. One might say that it might be chronologically wrong to compare the urban patterns of Pompeii and

[62] At different random encounters I have encountered the biggest number I have ever heard was fifty!

[63] Spiro Kostof, *A History of Architecture, Settings and Rituals*, New York and Oxford, 1985, Chapter 9: Rome Caput Mundi

[64] MacDonald, W. (1986). Form and Meaning. In *The Architecture of the Roman Empire: II: An Urban Appraisal* (Vol. II, pp. 253). London and New Heaven: Yale University Press

Aphrodisias, given the fact that the time was interrupted with volcanic eruptions at Pompeii in 79 A.D. and that the extensive construction projects at Aphrodisias started only in the 1st century A.D.[65] However one has to consider the fact that Aphrodisias might be an example of the urban pattern idea of the Roman architects when they had a clean slate. Therefore in order to understand the city as a whole and the importance of the Sebasteion in this complex pattern we need an accurate model of the city. By doing so one can also have a different perspective on the argument of whether the Sebasteion was a landmark or a node[66], or both, in the urban pattern of Aphrodisias.

Additionally, a detailed digital reconstruction of the Sebasteion will be made in order to understand better or at least get closer to the meaning of the building. In view of fact that the Sebasteion stands out from other imperial cult buildings in Asia Minor with its carefully woven architectural and sculptural composition,[67] which may also be considered as a demonstration of the capabilities of the Aphrodisian sculpture workshops, we have to combine digital architectural modeling with digital models of the reliefs of the Sebasteion porticoes in our quest to experience and understand a building which had such strong visual ways of communication. Furthermore, by orienting the model with the existing building one might even try to experience the scale, proportion, rhythm and textural effects in the perspective of the daylight factor.

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[65] Ratté, C. (2001). New Research on the Urban Development of Aphrodisias in the Late Antiquity. (D. Parrish, Ed.) *Journal of Roman Archaeology Supplementary Series Number 45* , pp. 119 - 121

[66] Lynch, K. (1960). The City Image and Its Elements. In *Image of the City* (pp. 46 - 90). Cambridge : The MIT Press.

[67] Smith, R. (1987). The Imperial Reliefs from the Sebasteion at Aphrodisias. *The Journal of Roman Studies , 77*, 88 - 138.

3.4. Decisions before Getting Started with Digital Reconstruction: Photorealism or the Mind's Eye?

This situation is more like a decision of an architectural model within its landscape for a design project: whether to make a scaled replica of the landscape or give the viewers the essence of the landscape. Unfortunately due to technological and financial limitations at hand we have to set ourselves the amount of detail on our models so that we can have a working model on our daily use computers[68].

In both of the models, one of the main concerns of the modeling procedure is the amount of detail needed on the buildings. In view of the fact that I was a member of the Anastylosis Team of the Sebasteion for six years, I had the chance to draw almost every block type of the building which gives me a large amount of architectural data. As a result, this gives me a chance to show the architectural features of the building to the viewers. In addition, by adding the reliefs to their proposed locations on the building, we might be able to get much closer to generate the visual imagery of the building. As mentioned before, one of the main purposes of the digital reconstruction is to create the effect of being there at that selected moment which faded away centuries ago, at least, in visual perception.

As a result, instead of creating a disturbingly realistic digital experience in order to understand the importance of the Sebasteion within its context, I will try to make a digital reconstruction of the city and the Sebasteion which will enable us to ask more direct questions in order to unveil the “real” impact of the building in its time.

[68] Since I cannot hire a supercomputer for a thousand dollars per hour for lack of finances I have to keep some of the details simple.

CHAPTER 4

MODELING THE CITY AND THE SEBASTEION

4.1 Model of the City of Aphrodisias

4.1.1. Modeling procedure

As mentioned before, the main purpose of making the model of the city of Aphrodisias is to show the viewers the Sebasteion of Aphrodisias within the context of the city. Before starting the modeling procedure, one has to determine which time era of Aphrodisias is going to be modeled. Since the purpose of this is to experience the Sebasteion as a whole within the context of the city, the date of the city must be set to early 3rd century A.D. As a result there will be no city walls[69] and the stadium would be higher than its current height[70]. A model cannot contain both the city walls and the North Portico of the Sebasteion at the same time and be academically dependable.

4.1.2. Preparing the Landscape Model

In order to make the model more reliable, before starting the model, a vast amount of information about the site had to be gathered. All known and available published maps and reports of the site about the selected era were collected. In order to model the landscape, especially to gather information about the hypsometry and

[69] Staebler, P. D. (2008). "Re-use of Carved Marble in the City Wall." in R.R.R. Smith, & J. Lenaghan (Eds.), *Roman Portraits from Aphrodisias* (p. 185 - 199). İstanbul: YKY. see also Ratté, C. (2001). New Research on the Urban Development of Aphrodisias in the Late Antiquity. (D. Parrish, Ed.) *Journal of Roman Archaeology Supplementary Series Number 45* , 116 - 147.

[70] Four rows of seats higher according to Welch, K. (1998). "The Stadium of Aphrodisias". In *American Journal of Archaeology, 102* (No. 3), 547 - 569.

hypsometric curves[71] of the landscape, three published maps (Plates 1, 2 and 3) and four monoscopic[72] (Plates 4, 5, 6 and 7) air photos were merged and scaled to each other[73].

In view of the fact that models generate the visual imagery of the buildings rather than the photorealistic experience of the city, the landscape also had to be presented in the same way. Therefore, instead of creating a whole mesh, with every detail of the landscape, a more figurative but comprehensive way of modeling was selected. The current model of the landscape was created to express hypsometric differences of the theater hill[74]. Moreover, the same modeling principle was applied to the modeling of the buildings. For this reason, none of the architectural orders are recreated or remodeled on building models. Especially in a city-scale model, eggs and darts of the Doric order or volutes of the Ionic order would not help us to understand the importance of the Sebasteion in the city scale.

4.1.3. Details, Colors and Roof Tiles

Even though the details of the buildings are *"sticks and boxes"* due to difference of scale, as seen in Figure 11, this model helps us to visualize how Aphrodisias looked like in its heyday in the 3rd century A.D. Moreover, the aim of

[71] Hypsometry is the measurement of land elevation relative to sea level. Hypsometric curves: A histogram of terrain altitude.

[72] Monoscopic view is a display system that produces a single view into a virtual environment which delivers the same angle of view to both eyes.

[73] See plates 4 – 7. I would like to thank Dr. Müh. Albay Hakan Maraş for his great help in the process of retrieving monoscopic photos of the site.

[74] Problems of acquiring elevations of the whole site will be argued in the upcoming chapters of this thesis.

the model was to help us understand the Sebasteion within its context; therefore, modeling details are redundant in terms of workload[75].

Even though it is known that buildings were painted in antiquity, it is hard to find complete data about the use of colors on the buildings of Aphrodisias with the exception of studies made by Mark Abbe on polychromy.[76] In view of the fact that the main purpose of this model is to understand the Sebasteion in the spatial organization of the city and more specifically the N-S axial street passing in front of the Sebasteion, to prevent a circus-like eye tiring graphical representations, shades of grey are selected as colors of the materials in the modeling process[77].

In the process of modeling buildings, one of the decisions was about whether to show the roof tiles on the buildings or not because that modeling decision would add color and that might cause a conflict with the color decision mentioned before. On the other hand, highlighting the heights of the buildings would give the viewer's eyes the sense of height and three dimensions among all the different shades of grey. As a result, only the roof tiles of the buildings are put in their places to show the edges of the buildings. Unfortunately while modeling the buildings on the city scale, details like windows, masonry patterns, sculptures or any similar detail that cannot be observed in this scale had to be left out.

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[75] In Figure 1, the landscape model was intentionally put out of the rendered scene.

[76]Smith, R., & Lenaghan, J. (2008). *Roman Portraits from Aphrodisias.* İstanbul: YKY. see also Smith, R., & Ratté, C. (2006). Aphrodisias 2005. *28. Kazı Sonuçları Toplantısı. Cilt II*, pp. 63 - 72. Çanakkale: T.C. Kültür Bakanlığı Anıtlar ve Müzeler Genel Müdürlüğü. see also Abbe, Mark B. "Polychromy of Roman Marble Sculpture". In *Heilbrunn Timeline of Art History*. New York: The Metropolitan Museum of Art, 2000–. http://www.metmuseum.org/toah/hd/prms/hd_prms.htm (April 2011)

[77] Further argument will be in the upcoming Chapter 5, Problems with Visuality and Misinterpretation

4.1.4. Houses of Aphrodisias: Grid Plan or Plans?

In the process of modeling the monumental buildings of Aphrodisias, there was a considerable amount of information at hand to visualize the building or at least its mass. Unfortunately, modeling the urban pattern of Aphrodisias was not as easy as its monumental buildings. Even though there is evidence for an ongoing urban grid pattern one cannot simply recreate whole houses of the city for practical reasons. First of all, the entirety of the known city has to be excavated in order to retrieve such data. Secondly, the geophysical survey of the site which was discussed by Ratté[78] shows us that the city was laid in a grid plan but it does not give information about the architecture of the houses and dwellings in Aphrodisias[79]. Finally and most importantly, the city lived on and its people modified their environment according to their needs. As a result, their houses evolved and underwent change throughout time which made it impossible to figure out how houses looked like in 3rd century A.D. Aphrodisias. Including the fact that Aphrodisias did not have a serious and devastating disaster which *stopped time* like in Pompeii or had a long and extensive excavation process, it is really hard to recreate the housing pattern of the city. On the other hand it is crucial to give the effect of the housing pattern of the city in order to bind the monumental buildings of the city to each other in re-creating the urban setting. Consequently, instead of modeling houses, only big boxes are modeled to define prospected areas of housing in 3rd century A.D. By doing so, the model gave the chance to perceive the streets and their role in order to understand the role of the Sebasteion in the urban context.

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[78] Ratté, C. (2001). New Research on the Urban Development of Aphrodisias in the Late Antiquity. (D. Parrish, Ed.) *Journal of Roman Archaeology Supplementary Series Number 45* , 116 - 147.

[79] See plate 3

In the modeling process, the Theater, Theater Baths, North and South Agoras, Sebasteion, Bouleterion, Temple of Aphrodite, Stadium, Basilica and Hadrianic Baths are modeled in order to show the major known buildings of the city. Even though the Atrium House of Aphrodisias, which is adjacent to the North Portico of the Sebasteion, was on the list of the buildings to be modeled, one can easily see that the information about it is only *partial*, because a part of the excavation compound stands on one half of the structure! This problem will make the viewer ask the question of how much information is retrieved about housing in Aphrodisias. In addition, one might also suggest that with the interesting alignment of the Sebasteion in the urban pattern of Aphrodisias there might be multiple grid plans adjacent to each other and a N-S axial street passing in front of the Sebasteion could be the street where these multiple grid systems merged.

4.1.5. Setting the Scenes

One of the most important decisions of a modeling process before the final images involves setting up the scenes of the model. How should the model be perceived in terms of composition and staging? What kind of scene would help the viewer to perceive which aspect of the model? One has to decide what kind of a perception and perspective is needed for which cause.

A series of images will be processed in bird's eye perspectives which will enable the viewers to see isometric views of the city from a height were they cannot get the same view unless they somehow managed to fly. By processing those images, viewers are able to perceive the spatial organization of the city and its elements in a bigger scale. On the other hand, human eye perspectives had to be more precise in

terms of location and width of the camera lens set-up that is going to be used while processing the scene.

Firstly, scenes had to be precise in their locations. The aim of this precision was to capture a perspective similar to an Aphrodisian's experience during the 3rd century A.D. In order to understand the Sebasteion, these scenes will help the viewers to understand how it was perceived while walking down the N-S axial street passing in front of the Agoras and the Sebasteion or which parts of the Sebasteion were visible from different spaces of the city. One of the model's aims was to find an answer or clue about how the ancient person perceived this built environment in terms of colors, light, texture, spatial organization and material. Therefore one can see how the Sebasteion was perceived from different spots of the city within the city context. More importantly, these scenes will help to perceive the Sebasteion from an exterior viewpoint[80]. Unfortunately most of the available published material about the Sebasteion has focused on its reliefs and the interior effects of the porticoes which create a false idea that the exterior of this building is kind of *"invisible"*. For this reason, this model is very crucial and important to understand the exterior view of the Sebasteion and define the "*visible"* and "*invisible"* parts of the building in the city scale.

Secondly, in order to get the spatial experience of the city, besides the location of the cameras, the lens width and the height of the camera have to be set to

[80] As mentioned before reliefs and all architectural order details are left off as a modeling decision. A detailed model of the Sebasteion will be the next step of this thesis with reliefs and architectural order details.

some standard. An average human is approximately 160-180 centimeters tall.[81] Therefore the *"human eye"* themed images should be processed around these heights. In addition, another scientific fact has to be included while setting up the camera's lens diameter, to simulate the perception of human-eye experience of the city. When looked at the focal length of a human eye,[82] one can see that the lens diameter should be 22 -24 mm. The main purpose of including these scientific facts is to get the experience of the model as close as to possible the actual experience that citizens of Aphrodisias had. As a result, these processed images could scientifically be valid images of these perspectives rather than any model images made during an architectural 3D-model which has the main purpose of marketing the designed product designed in the office.

4.2. The Model of the Sebasteion

4.2.1. Modeling Procedures of the Sebasteion

Starting with the first model in 2005, in six years time, including the current 3D-model in this thesis, there were four different attempts to make a digital reconstruction of the Sebasteion. The first one was an act of curiosity as to whether it is possible or not to make a digital reconstruction of the Sebasteion and it was just an experiment when I was a sophomore student of architecture. Two other digital reconstructions were made in order to experience and test different computer software and modeling techniques. However, this model is so far not only the most

[81] According to Özer, B. K. (2008). "Secular trend in body height and weight of Turkish adults." *Anthropological Science* , vol. 116, pp. 191 - 199. an average of 177 cm for male and 160cm for females

[82]For the lens diameter of human eye see Elert, G. (n.d.). *Focal Length of a Human Eye*. Retrieved March 16, 2011, from The Physics Factbook An Encyclopedia of Scientific Essays: http://hypertextbook.com/facts/2002/JuliaKhutoretskaya.shtml

satisfactory one in terms of visual quality and detail but also is the most reliable one in terms of the database used in order to reconstruct the building as a whole. Every known block type was drawn, studied and documented in the field during the anastylosis project. Moreover, besides the actual reconstruction of the SE corner of the building, the Propylon and some fragments of the temple were studied for future projects. As a result, block typologies, detailed drawings and more importantly, some reconstruction drawings were already made in order to understand the structure of the Sebasteion at Aphrodisias.

Yet, with the exception of some personal attempts, none tried to bind all the information in one single model or drawing in order to understand the importance of the Sebasteion as a whole. Therefore the first step of the modeling procedure was to merge all the known information about the Sebasteion. Plans, sections and elevations of the building were all merged into one single drawing at the same scale to create a template to make a 3D model of the building. Multiple drawings of different components of the Sebasteion were needed with the purpose of creating a three dimensional model (Figure 23). Moreover, drawings of single blocks of different parts of the building were studied in order to make the model more reliable.

4.2.2. Modeling Procedure and Setting the Detail Level of the Model

As in the case of the model of the city of Aphrodisias, some specific modeling decisions had to be made even before starting the modeling process. Though it may sound redundant to repeat this point, even the time era of the model had to be set in order to make both models coherent and support each other. As a result, the time era of this model was also set to the early 3rd century A.D. This is

because in getting closer to understanding the overall impact of the Sebasteion, the North Portico is a crucial part of it.

The model of the Sebasteion had to have more architectural details in contrast to the city model and its *"boxes and sticks"* approach. In view of the fact that the zooming levels of both models are different, volutes on an Ionic capital, leaves on a Corinthian capital or lion heads on cornice blocks are needed to visualize and understand the building as a whole. All known block types of the Sebasteion building documented in the field with the same drawing scale which gave an abundance of data for the modeling process (Figures 24, 25 and 26).

Unfortunately as in the case of the model of Aphrodisias, it is hard find complete information about color or use of color in the Sebasteion. On the other hand, the main purpose of this study is to understand the Sebasteion within its spatial organization and getting close to its effects. As a result, shades of grey were selected as colors of the materials in the modeling process. In addition, to emphasize and highlight the height of the building and give the sense of human scale in the model, roof tiles and human figures defined with different colors rather than a shade of grey.

4.2.3. Let the Modeling Begin

The modeling process of the Sebasteion was more like constructing it in a "virtual construction yard". Besides its modeling decisions on colors, materials, textures and the amount of detail concerning how the model was drawn and organized is another important aspect of this model. One of the most important aspects of the model was to align the orientation because in this digital reconstruction light and shade have very crucial roles in attempting to get as close as possible to the

original appearance and impact of the Sebasteion. As mentioned before, the Sebasteion connects to its users with graphical interfaces more effectively than inscriptions. As a result, while trying to understand the importance of every component of the building, a relief exhibited in a perfectly illuminated museum wing would give the viewer's eye an unintended faulty perspective[83].

A similar way of "construction" was implemented in the Sebasteion's modeling process. During the process of constructing the model, the building was separated into four different segments: Propylon, North and South Portico and the Temple. Template drawings were divided into four major segments as well. Sub-segments were the architectural orders of the buildings. For example; the South Portico of the Sebasteion was one of the four major segments of the model and it was divided into three sub-segments in relation with its architectural orders.

The first step was setting up the ground for the model. Staircases, podiums, pavement level of the street and the alley were all placed on their respective locations in relation with their elevations from the street level.

Secondly, column bases, columns, and capitals were modeled and put on their possible locations on the model. Compared to modeling the floors or the staircases of the building, modeling column bases, columns and capitals was rather complicated. Field drawings of the blocks played a very crucial role in creating the objects in the virtual environment. Scanned drawings helped to make more accurate models of the moldings in order to be precise. After the modeling process of the blocks, they were placed on their respective locations. During the whole process, none of the

[83] However, this illumination on reliefs may help the modeler to create a perfect map to recreate the model in virtual reality.

components was modified in terms of color or texture. Block colors were used to distinguish components from each other during the modeling process. As seen in Figure 27 and 28, without any texture or *color* in terms of our understanding of an ancient building, the image is disturbing rather than being informative.[84] This colorful image helps the modeller to identify the components of the building in a bigger scale. However this colorful image might also create an incorrect perspective in the viewer's eye.

The final touch for these components was to add texture and color. As mentioned before, due to the lack of data about color in the Sebasteion of Aphrodisias, shades of gray were selected as color. Moreover former studies showed that column shafts had the *entasis* effect to support the perspective effects of the building. Therefore the same effect had to be created in order to simulate the building in a virtual environment.[85]

After modeling the bases, columns and capitals, the next step was placing the objects on their locations so that the intercolumniation of the building could be experienced visually. Even though the intercolumniation of the South portico can be seen in the field, it is impossible for the visitors to visually experience the whole building.

4.2.4. Modeling Entablatures

The next step of the modeling procedure was putting the entablatures of the architectural orders on their places. Thanks to extensive studies in the field, a

[84] This subject will be studied in the upcoming chapter Problems with Visuality and Misinterpretation

[85] However details like flutings which will enhance the experience of the viewer's eye on the model applied on components via different modeling or mapping techniques.

detailed section of the entablatures is at hand which helped considerably in the modeling process.[86] As seen in Figure 32, sections of different stories helped to define a planar object. Combined with the plan of the building, sections enabled to create a shape along a path, thus creating a 3D object which includes architrave, frieze cornice and stylobates.[87]

In addition, during the Anastylosis project, small but vital information was gathered in terms of understanding how the entablatures worked in the whole building system not only among the architectural blocks but also with respect to their relation to reliefs and their bases. Moreover, throughout the modeling process of the entablatures, a similar problem came to light which might have also occurred during the construction of the building. In view of the fact that classical orders had some problems with turning corners[88] the north-west corner of the South Portico collided into the Propylon as in the original building.

Followed by the entablatures put on their original places to improve the effect of the components of the model, some basic elements of the architectural orders such as; triglyphs of the Doric order, dentils on the Ionic cornices, lion heads on all cornice blocks, acroteria of the South Portico and the flutings on column shafts were added. These small details might not be perceived on general views and perspective renderings. However, these components are very important elements which will

[86] As mentioned before in this thesis, there are multiple ways to model an object and all of these models will give the same effect to the viewer's eye. This modeling type and technique is selected upon the modeler's personal choice.

[87] Doric and Ionic entablatures of the South portico of the Sebasteion have stylobate blocks over cornices to provide a level construction surface. A detailed further study of these blocks will on the upcoming publication by Onur Öztürk and Özgür Öztürk.

[88] Coulton, J. (1988). The Problem of Design *Ancient Greek Architects at Work: Problems of Structure and Design.* Oxford: Oxbow Book. pp.60-64

enhance the light and shade experience of the model. Especially in a building like the Sebasteion which possesses very strong visual communication to its viewers these small but critical details will helps us to get closer to understand the impact of the Sebasteion.

4.2.5. Modeling Reliefs

Modeling the reliefs and bases of the Sebasteion was rather a challenge when compared to modeling the architectural components of the building. First of all, every architectural component of the Sebasteion was drawn in the field. Even though there might be missing blocks, in view of the fact that the building had a repetitive tempo, which helped to replace the missing parts of the building, it was modeled without any technical difficulties. On the other hand, when looking at the reliefs, it is almost impossible to find a common repetitive pattern. Additionally, none of the reliefs has any information at all about how the missing ones could be. Therefore, the models of the reliefs could only be as real as the existing information at hand could offer otherwise; a pretentious action about the missing information would turn this study into a worthless 3D animation. Moreover, there are 51 (fifty one) possible spaces where a relief can be put between the columns of the North Portico on the Ionic and Corinthian stories which gives us the total number of 102 (a hundred and two). Unfortunately, the surviving reliefs of the North Portico are just a handful and most of them are just relief bases which give us information about the placement of the particular relief but not its visual imagery[89].

[89] Smith, R. (1988). Simulacra Gentium: The Ethne from the Sebasteion at Aphrodisias. *The Journal of Roman Studies , 78*, 50 - 77. see also Smith, R. (1987). The Imperial Reliefs from the Sebasteion at Aphrodisias. *The Journal of Roman Studies , 77*, 88 - 138.

Secondly, the original locations of the reliefs are in debate. Even though there is a drawing at the new wing of the Museum of Aphrodisias with the reliefs on their projected and prospected locations on the building, there is one important detail about the reliefs. As mentioned by Smith, the reliefs of the South portico have clamp holes on their sides which help the reliefs to connect to architectural pieces and thus the structural system[90]. Therefore in order to verify the original locations of the reliefs all of the original architectural pieces must be tested with the reliefs so that we can have a solid verification about the position of the relief on the building. As mentioned by Jones, arranging reliefs according to context and find spot plans might give an idea about the visuality of the building but it is really important to keep in mind that this visual image might not be the original state of the building and the reliefs[91]. Therefore, even before modeling the reliefs on the building, it is important to keep in mind that existing data is not very solid about the positions of the reliefs which basis a very doubtful base for the modeling process. Making a reconstruction of the building with reliefs based on this data might create an image of the building in a state which it had never been, causing some serious problem of perception.

Lastly, and more importantly, modeling reliefs has different techniques and technologies compared to architectural modeling. The most efficient way to model a relief is to scan it with a 3D scanner which will create a digital replica of the existing situation of the relief. Unfortunately, there had been no effort to document the reliefs of the Sebasteion with this technology and this process is still too expensive for

[90] Smith, R. (1987). The Imperial Reliefs from the Sebasteion at Aphrodisias. *The Journal of Roman Studies* , *77*, p.113 fig.7

[91] Jones, M. W. (2000). Introduction The Problem of Interpretation. In *Principles of Roman Arhcitecture* (pp. 1 - 13). New Haven and London: Yale University Press.

individuals. Consequently an uncomplicated technique had to be chosen in order to model the reliefs. This technique is based on using the mapping system of the selected material and it only needs good photographs of the selected reliefs[92]. By manipulating the photographs by using photo-editing tools, it is possible to model the reliefs of the Sebasteion. However, these models are not digital replicas of the existing situation but they have the ability to provoke viewers to ask questions about the building and get us closer to understanding the impact of the building.

[92] Birn, J. (2000). Materials and Rendering Algorithms. In *Digital Lighting and Rendering* (pp. 192 - 251). California: New Riders.

CHAPTER 5

PROBLEMS WITH VISUALITY AND MISINTERPRETATION

5.1. New Museum Wing to the Museum of Aphrodisias

A new museum wing was built for the Aphrodisias Museum in 2007. The main intention of this project was to create enough space to make a new exhibition space for the reliefs of the Sebasteion. The designer's idea was to elevate the building on steel columns so that none of the construction of the new wing would harm the ruins beneath the floors[93]. The intercolumniation of the building is 5.40m which constitutes reference to the intercolumniation of the Sebasteion[94]. The reliefs are currently in a perfectly illuminated and clean exhibition hall where all visitors can reach and even though they should not, touch them.

Among several of its disturbing aspects, how the new building and this type of presentation visualizes the Sebasteion to the viewer's eye is the subject of this study. Even in a small graphic experiment, one might see a very crucial perception change to the viewer's eye. For that small experiment, the same reliefs are put in their proposed locations on the building and on a section of the museum (Figure 52 and 53). In addition, the same groups of human figures are added on both drawings and on both of the drawings group's height is set to 180 cm. A significant argument about the museum exhibition is that it does not get close to the visual reality of the

[93] Bektaş, C. (2008). Afrodisyas Ek Müzesi. *Yapı Dergisi , 315*, 68-73.

[94] Ratté, C. (2001). New Research on the Urban Development of Aphrodisias in the Late Antiquity. (D. Parrish, Ed.) *Journal of Roman Archaeology Supplementary Series Number 45* , 116 - 147. and Erim, K. T. (1986). Recent Discoveries. In K. T. Erim, *Aphrodisias, The City of Aphrodite* (pp. 103 - 126). London: Muller, Blond & White.

building in terms of understanding the impact of the building or the possible experience that their long gone users had. It may help to examine the details on reliefs more closely and give us some clue about the possible production methods. However by doing so, it might be faulty in terms of understanding the building as a whole and might even create a wrong perception about the building.

In addition to this *change of perception* due to presentation in a museum, it would help to ask the question of how much we can understand the entire building from a component of it. How much can a viewer understand the whole with a photo of a relief or a single sculpture of a façade? The technology employed in the study helped us to perceive the Sebasteion in two models. The first model's intention was to experience the Sebasteion within the city context. The second model was after creating the whole building to simulate the experience of a Roman citizen of Aphrodisias and how he or she perceived this building not only from the interior but also in the exterior. The main concern of both of the models was to put every bit of information on the models so that the models could be "real" as much as possible. Unfortunately some information was always missing and this absent information affected the final result of the models. Starting with colors of the components, missing reliefs and unexcavated areas around the Sebasteion or the site caused problems in the modeling process.

5.2. Color and the Sebasteion

The neo-classical premise assumed that the ancient Greek and Roman sculpture and architecture were monochromatic and sought to represent the figures in terms of such aesthetics. Recent studies have shown that antiquity was not

monochromatic as previously assumed. Color was an important aspect of architecture and applied in a wide variety.[95]

During the modeling process of the Sebasteion and the city of Aphrodisias, a decision had to be made for the color aspect. As mentioned in the previous chapters, there are few publications about the use of color on the components of the Sebasteion[96]. Moreover when looking at the city scale, it is not possible to get a full scale color palette. If that small amount of information had been applied to the model, some problems might have occurred. First, while a part of the model was colored with their proposed original colors, coloring the rest with a shade of gray would have created a distracting image in terms of perception. In addition, due to the different scale and viewpoint, color details would not be visible to the viewer's eye and the whole composition would still be seen as different shades of gray with light and shading effects. On the other hand, to enhance the three dimensional effect and show the vertical borders of the buildings, roof tiles had been put in their places with their colors.

Even though there is a vast amount of missing information about the color use in the Sebasteion, it does not mean that if any data is found about the use of color in the Sebasteion of Aphrodisias, this information cannot be applied to the model. In

[95] Brinkmann, V. (2006). Sergiye Giriş Antik Dönem Heykeltraşisinin Çokrenkliliğinin Araştırılması. In *Renkli Tanrılar Antik Heykel Sanatında Çokrenklilik* (I. Işıklıkaya, Trans., pp. 13 - 22). İstanbul, Turkey: Ege Yayınları.see also Bradley, M. (2009.). *Colour and Meaning in Ancient Rome* . Cambridge ; New York: Cambridge University Press.

[96] Except some researches made by Mark Abbe in the last 5 years. Smith, R., & Ratté, C. (2006). Aphrodisias 2005. *28. Kazı Sonuçları Toplantısı. Cilt II*, pp. 63 - 72. Çanakkale: T.C. Kültür Bakanlığı Anıtlar ve Müzeler Genel Müdürlüğü. Abbe, Mark B. "Polychromy of Roman Marble Sculpture". In *Heilbrunn Timeline of Art History*. New York: The Metropolitan Museum of Art, 2000–. http://www.metmuseum.org/toah/hd/prms/hd_prms.htm (April 2011)

contrast, this kind of monochromatic model will help us to visualize a possible colored version of the building if the data at hand is solid and reliable. By modeling possible varieties of the Sebasteion with colors on architectural components and reliefs, based on a solid and scientific study, can get us one step closer to understanding the overall impact of the building and the possible visual experience that an Aphrodisian would have had in the 3rd century A.D.

5.3. Data That Built the City Walls

Unfortunately another problem occurs even if the information about the color had existed. This is seen in Figure 54, even though there is an abundance of information there about the reliefs and the architecture of the South portico[97]. In view of the fact that the South portico is the most preserved part of the building, the North Portico, Propylon and the Temple of the building turn into a real challenge. The North Portico collapsed around the 3rd century and its components were re-used as *spolia* for the city walls. Dramatically a considerable part of the Temple and the sculptures of the Propylon shared the same fate. Moreover the temple was converted into workshops in the 5th century and according to Ratté,[98] during this conversion procedure, most of the temple was dismantled. Yet the existing building blocks of these components give the viewers enough information about the whole of the building in terms of architectural composition. However one cannot say the same for

[97] Image taken from the information panel of the Aphrodisias Museum. For more information see also Ratté, C. (2001). New Research on the Urban Development of Aphrodisias in the Late Antiquity. (D. Parrish, Ed.) *Journal of Roman Archaeology Supplementary Series Number 45* , 116 - 147. and Smith, R. (1988). Simulacra Gentium: The Ethne from the Sebasteion at Aphrodisias. *The Journal of Roman Studies , 78*, 50 - 77. and Smith, R. (1987). The Imperial Reliefs from the Sebasteion at Aphrodisias. *The Journal of Roman Studies ,77*, 88 - 138.

[98] Ratté, C. (2001). New Research on the Urban Development of Aphrodisias in the Late Antiquity. (D. Parrish, Ed.) *Journal of Roman Archaeology Supplementary Series Number 45*, 116 - 147.

the reliefs and the sculptures of the North Portico. As seen in Smith's article,[99] a handful of reliefs and relief bases have survived from the North Portico. Sadly, the amount of information about the North portico reliefs has made it impossible to model the whole with reliefs. As a result, one can only have an idea of what the buildings were like when they were intact but did not have enough information for a massive photorealistic reconstruction.

In addition to *spolia* use and conversions of the building itself, another major problem occurred during the modeling process. Albeit the information about the interior and the possible visual effects at the alley of the Sebasteion, it is really hard to visualize the exterior of the building. The existing information suggests that the back walls of the Sebasteion were masonry walls without any cladding or ornaments. Moreover if there was any cladding or ornamentations on the building, the possible area that these blocks might have fallen has not been excavated yet or may still be lying just under the excavation compound.

5.4. It is always Sunny in Renderland

As mentioned before, all known information about the city of Aphrodisias and the Sebasteion had to be studied for the models to get close to reality as much as possible. Despite all the missing factors and detailed information about the components of the building, a digital reconstruction study could still get us closer to understand the impact of the Sebasteion because there some factors that can still be tested. In view of the fact that it is not possible to make a photorealistic image of the

[99] Smith, R. (1988). Simulacra Gentium: The Ethne from the Sebasteion at Aphrodisias. *The Journal of Roman Studies , 78*, 50 - 77.

Sebasteion in terms of architectural details and reliefs does not mean that realism can be achieved only by these details.

In order to explain this, let us take an architectural magazine from a magazine stand and give it a quick look. One can clearly see that almost every design proposal is presented in stylish 3D views with shining building materials in a warm and sunny day without any clouds on the horizon at all. People are happy about the place, lovers are walking hand in hand, kids are playing games with their friends and the elderly are watching kids playing games in a peaceful environment. It is always sunny in this digital environment. On the other hand, when people actually start to use the building, they add or take away something from the building and due to usage some deterioration occurs inevitably. In other words, nothing stays the same. Unless it is intended in the design, like copper clad metal roofs or façades turn to shades of green from copper tones due corrosion, in an architectural staging, presenting your design object worn and torn, even a little, would cause problems. Given that academicians or commissioners would be expecting a brand new building or a renewed building, presenting the project years after the project's completion would cause disappointment. Dirt never looks good on a new building and it never was a desired object for the design community. On the contrary Favro points out that:

> *"…visitors to the physical sites recall not only the monuments seen, but, with equal force, the weather, crowding, mood, sounds, and other sensorial responses. These vibrant aspects of the human-architecture connection need to be evaluated for historical environments."*[100]

[100] Favro, D. (2006). The Digital Disciplinary Divide: Reactions to Historical Virtual Reality Models. In D. Arnold, E. A. Ergut, & B. T. Özkaya (Eds.), *Rethinking Architectural Historiography* (p. 210). New York: Routledge.

In addition, a non-academic community demands all disturbing elements of nature and chaotic skies in their visual experiences which is the entertainment purposed digital imagery. Despite the fact that computer games and movies represent a visual festival of their selected era, historical facts and figures might have been distorted due to a scenario or the technical restrictions. For example; a particular game sequel called Assassin's Creed draws attention with its selected time eras and locations. First, the game takes place in the Middle East (Holy Land) during the Third Crusade in 1191 which enable the players to experience not only the visual elements of the Holy Land, but also the a socio-cultural experience of the era.[101] As a part of the sequel, the second game takes place in the 15th century Italy and İstanbul.[102] Historically accurate digital reconstructions of the cities were also impossible to make due to similar problems encountered during the modeling process of the city of Aphrodisias[103]. More specifically, creating the urban pattern of the cities was a problem in contrast to visually astonishing models of the landmarks like the Great Mosque of Damascus, Dome of the Rock, Florence Cathedral or the Piazza San Marco. But the main purpose of these models was creating a digital environment that helps to experience these cities as a pedestrian. In addition, this experience was not in a brand new city image with clean streets and on a bright sunny day: it involved dust, dirt, moist, mud, manure, beggars, dangerous alleys, annoying guards, etc… Any experience you might have while walking on the street was waiting for you. One

[101]Ubisoft. (n.d.). *Assasin's Creed Experience*. Retrieved 06, 01, 2011, from Assasin's Creed: http://assassinscreed.uk.ubi.com/assassins-creed-1/experience/Experience.php

[102] Second part of the game is a trilogy and according to news last part of the sequel takes place in İstanbul around the 1500s. *Home*. (n.d.). Retrieved 06, 01, 2011, from Assasin's Creed Home: http://assassinscreed.uk.ubi.com/assassins-creed-2/

[103] Missing urban pattern of Aphrodisias.

might ask the question of what can be learned from these games and applications and convey these experiences to our models.

It is always important to keep in mind that these models are for entertainment purposes only but these images and experiences show that representing Aphrodisias and the Sebasteion in a brand new state with clean streets in a warm and sunny day would not get us closer to understanding the impact of the city or the building. On the contrary, these images will create a wrong perception of the study which might even end in an academic disaster! Therefore after the modeling processes of both models are completed, renders must be taken from same camera angles at different times of the days and year. By doing so, it will help us to understand how the buildings had different effects on their users in daily life and not only on a warm sunny day.[104] A similar study made by Massimo Limoncelli pointed out that even a little bit of dirt or weathering effect on this kind of study would enhance the reality of the presentations.[105]

In addition to various weather conditions and the dirt effects to enhance the perspective images it is important to put human figures on them. By doing so, perspective images will help the viewer's eye to scale every detail on presentations. In addition to enhancing visuality and reality it is important to visualize the same perspectives with a different user population. Therefore it is important to visualize the Sebasteion in different times of the day, in different weather conditions and in

[104] If enough technology applied to models it is even possible to make rain or snow on these models.

[105] Limoncelli, M. (2009). Virtual Archeology a Hierapolis di Frigia: Restauro virtuale e restituzione 3D degli edifici di ordine dorico. In T. Ismaelli, *Hierapolis di Frigia III Architettura Dorica a Hierapolis di Frigia* (pp. 493 - 503). İstanbul: Ege Yayınları.

different user numbers. Experiencing different numbers of visitors on different days is quite expected in a city which was devoted to Aphrodite. In view of the fact that the Julio-Claudian dynasty traced their roots to Aphrodite, a building dedicated to the Imperial cult in Aphrodisias would have drawn a lot of attention during a festival of Aphrodite. Even though it is hard to determine a specific date on a possible festival date at Aphrodisias, it is possible to experience crowds in different times of the year virtually. As a result, there will be a big collection of similar images during different times of the day, weather conditions and different user population, but this bombardment of information will help the viewer's eye to perceive the Sebasteion one step closer to reality.

5.5. Image and its Innocence

5.5.1. Neither Fantasy nor Reality

Supplementing the original Trajan's Column in Rome, there are three proper replicas of the column in the world. At the Museum of Roman Civilization in Rome[106] and the National Museum of Romanian History, Bucharest, visitors have the chance of experiencing column segments in order where every segment of the column is cut into different sections.[107] More interestingly, the exhibition is quite unusual at the Cast Courts of the Victoria and Albert Museumin London.[108] The

[106] Macadom, A. (1985). *Blue Guide Rome and Environs.* London & New York: A&C Black & W.W.Norton. see also Romana, M. d. (n.d.). *Museo della Civiltà Romana Room LI: Trajan's Column* . Retrieved June 1, 2011, from Museo della Civiltà Romana Web site: http://en.museociviltaromana.it/percorsi/percorsi_per_sale/sezioni_tematiche/sala_li_la_colonna_traiana

[107] For a detailed illustration of sections see Canelli, d. F. (1974). *Guida archelogica di Roma.* Rome: Arnaldo Mondadori Editore.

[108] *Trajan's Column - Victoria and Albert Museum*. (n.d.). Retrieved June 1, 2011, from Victoria and Albert Museum: http://www.vam.ac.uk/page/t/trajans-column/

replica of Trajan's Column was cut into half to fit into the courtyard of the museum! On the other hand, as mentioned by Davies, when looking at the column itself viewers always had to circumambulate the column to read it.[109] Maybe the purpose of such an arrangement was to experience the processional rituals with strong graphic language or to emphasize the socio-political structure in a different way. The main conspicuous point for us is how the column with its scroll was perceived. Even though there is a debate about the original location of the column,[110] while looking at the reliefs and their details, it is important that albeit the amount of detail on the entire surface of the column, it is hard to perceive the higher parts compared to the lower ones. Yet in a museum experience, it is possible to experience every bit of detail of the columns in perfectly illuminated exhibition setups.[111] On the other hand, when looking at the possible experience of an ordinary Roman citizen walking in the Forum of Trajan to run some errands, the total experience would have been completely different than that of any tourist in the museums or even gazing at the original Column of Trajan. One of the most important aspects of this possible experience of the Trajan's Column in the Trajan's Forum on a busy and crowded day is that the visual perception of the whole was completely different than any possible exhibition in a museum. Therefore, despite the fact that the museum experience of the Trajan's Column is an informative one about the segments of the column and the craftsmanship on them, it creates a distorted view about the perception of the whole.

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[109] Davies, P. J. (1997). The Politics of Perpetuation: Trajan's Column and the Art of Commemoration. *Journal of Roman Archaeology , 101* (1), 41 - 65.

[110] Jones, M. W. (200). Trajan's Column. In *Principles of Roman Architecture* (pp. 161 - 176). New Haven and London: Yale University Press. see also Lancaster, L. (1999). Building Trajan's Column. *American Journal of Archaeology , 103* (3), 419 - 439.

[111] Or as in the case of Victoria and Albert Museum, in a rather different and unusual way than we are used to.

This new image is either a romantic or didactic projection of the past rather than giving the sense of reality to the viewers.

The Tetrapylon of Aphrodisias is the monumental gateway to the temple of Aphrodite. It was built around 3rd century A.D. and except for a renovation in the 7th century, defacing of the pagan gods, it stayed intact until it collapsed. In the 1980s the building was re-erected back to its original place with an extensive anastylosis project and since then the Tetrapylon of Aphrodisias has welcomed all visitors to the site with its strong visuality.[112] After a small village square, which resembles the old days of its village days just before Kenan Erim started his expedition, visitors who choose the North path first encounter the Tetrapylon. However, this first visual encounter is rather different than what an Aphrodisian might have had because the tourist path is higher than the prospected street floor of the 1st century.

Moreover this kind of wide perspective view where the tourists can perceive the Tetrapylon is from the inside of a building and possibly through a wall. As seen in Figure 61, when looking from the street level of the city, one can see that the Tetrapylon is hard to perceive because the other side of the street is filled with shops and colonnades. In addition, as seen in the Aphrodisias 3rd century city centre map,[113] the Tetrapylon was only the monumental entrance of a processional courtyard which means that there were walls on the North-South axis of the building and it was never visual as it is today. Therefore the image of the Tetrapylon which is experienced so focally during a visit to the site is a *romantic image of a wrong*

[112] As a sign of respect after his death, Kenan T. Erim's tomb is also located very close to the Tetrapylon.

[113] See Plate 3

perception rather than the reality. Digital modeling techniques and presentations in architecture may have a similar tendency when it comes to representing ideas and spaces. These drawings are mostly to give the viewers' eyes an idea about how the project might look or feel like when they are completed. The *possible* visual experience of a user will not be the reality itself but it might give an idea.

In view of the fact that the Sebasteion had a similar problem of presentation on the site due to tourist paths, unexcavated areas and the presentation of building components in the new museum wing, images created by a digital model of the Sebasteion has to cover what the site experience could not in terms *of visual experience*. For example, there are 13 surviving imperial reliefs from the south portico of the Sebasteion. Emperors, starting with Augustus to Nero, princes, imperial women and sacrificial scenes are depicted in this composition of reliefs. Additionally, when looking at the position of the reliefs on the building, an intriguing story of perception draws attention. Smith criticizes the work of Aphrodisian sculptors as the models were redesigned according to local concepts and simplified the work on detail[114]. On the other hand, when the reliefs are put into their projected locations one might wonder how these abbreviated depictions would have been perceived. Looking at the same relief in a perfectly illuminated museum and on its projected location on the building two stories up from the ground have different effects to the viewer's eye. Consequently the amount of the perceived detail would be different from each other.

[114] For a criticism of R. Smith's approach see Öztürk, O. *Temples of Divine Rulers and the Urban Transformation in Roman-Asia, The Cases of Aphrodisias, Ephesos and Pergamon.* Unpublished dissertation project, University of Texas at Austin.

Otherwise, getting eye-appealing images of the Sebasteion to the viewer's eye which have no information that only a digital model could show is only a small stage show with a big budget. In order to avoid such undesirable results both of the models should get close to reality as much as possible. As mentioned before, in order to get closer to reality in the three dimensional models, multiple images of the Sebasteion and the city of the Aphrodisias were rendered from the same perspective in different conditions.

5.5.2. Replacing the Actual Past with an Imagined Past

Images had to be a product of an extensive study of the building and its surroundings. All the known data that might affect the result of the model should be applied to it carefully and all the known users should be aware of advantages and disadvantages of such studies. In view of the fact that a tool that is used to represent a building in an imaged future is turned in a way to visualize a past based on scientific information, it is really important to draw a line that separates the actual past and the imagined past[115].

Representing the imagined past to viewers in a very strong but faulty communication language will end up in misinterpretation of history which will make the whole modeling process less worthy, if not worthless. For instance; the example of Paestum engravings might give an idea of how a pretentious action might lead one to another and end up in a skewed perception with or without intention. The first engravings we know about the temples in Paestum were made by Bartozolli and

[115] Arnold, D., & Bending, S. (2003). Introduction Tracing Architecture: the Aesthetics of Antiquarianism. In D. Arnold, & S. Bending (Eds.), *Tracing Architecture: the Aesthetics of Antiquarianism* (pp. 1 - 10). Oxford: Blackwell Publishing.

these engravings became standard views for the following fifty years. These engravings were long accepted as the real depiction of the buildings despite the fact that they were in conflict with verbal descriptions of the buildings[116]. Therefore by creating an imagined past based on assumptions and missing information alone, the whole study would be another subject of an academic work in the future on how an erroneous digital reconstruction may lead into fantasy rather than reality. Who would like to be labeled as a manipulator of history for his/her own benefit? Such complications can arise with any academic work, but digital reconstructions are more prone to it, since they are visual tools viewed by the masses as well as academics.

Another example of accepting existing information as complete and valid which may lead to misinterpretations can also be seen about the color factor in sculptures and the sculptures of famous sculptors like Michelangelo, Bernini or Canova. As mentioned before, studies have shown that sculptures were painted in antiquity[117]. Color was an important factor that completed not only the sculptures but also architectural components of the building. Unfortunately due to weathering, vandalism and other factors, the painting on these components wears off leaving next to nothing which almost gives the idea that there was no painting at all. Now,

[116] Arnold, Dana. "Facts or Fragments? Visual histories in the age of mechanical reproduction." In *Tracing Architecture: The Aesthetics of Antiquarianism*, edited by Stephen Bending Dana Arnold, 30 - 48. Oxford: Blackwell publishing, 2003.

[117] Brinkmann, V. (2006). Sergiye Giriş Antik dönem heykeltraşisinin çokrenkliliğinin araştırılması. In *Renkli Tanrılar Antik Heykel Sanatında Çokrenklilik* (I. Işıklıkaya, Trans., pp. 13 - 22). İstanbul, Turkey: Ege Yayınları.

however, there is scientific evidence that these sculptures were completely painted as revealed by the lab study in Cantor Arts Center at Stanford University[118].

Along with this evidence, it is really ironic that starting with the Renaissance, sculptors shaped their works and did not paint them because they thought that Greeks did not paint them. This is really a fascinating outcome which is completely based on an assumption. Centuries of work of art and architectural theories were based and shaped on false premises of information at hand about the color use in antiquity. A painted version of the Statute of David of Michelangelo is out of question because it was never intented or thought that way. But while looking at the Discobolus of Myron[119] one has to keep in mind that one day someone might find a copy which has information about a possible color use on it which will completely shake the very foundations of our own perception about the sculpture. Because the known image has created an austere expectation, even if that "probable colored copy" was to be found, some might even claim that the newly discovered sculpture is wrong and that Discobolus of Myron should be colorless! As a result while working with such strong graphic communication tools it is important to keep in mind that the image is a wolf with puppy eyes.

The aim of this study was getting closer to understanding the impact of the Sebasteion within the city context by using architectural visualization tools. Therefore any pretentious action based on assumptions rather than scientific proofs

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[118] True Colors: Rediscovering Pigments on Greco-Roman Marble Sculpture http://museum.stanford.edu/news_room/true-colors.html

[119] I thought that there would be no other image that is so iconic than Discobolus. It is almost everywhere. Even in modern day Olympic images. Besides a photograph of Discobolus of Myron stands in my thesis advisor's book-shelf in her office and every time I drop by to her office after opening the door that image is the first thing that welcomes me upon entering.

during the modeling process will not get us closer to understand this impact. On the contrary it will create a diversion that will lead to misunderstanding and misinterpretation of the building and its components and it will echo in the future in a brutally straightforward way.

CONCLUSION

In daily architectural production computers have opened new horizons to architects. Architects are now able to draw their projects on a computer screen which has rescued them from making the same drawing again and again just because of a misplaced detail or a smudge on the paper. Visualization technologies have helped architects to envisage their design ideas in an imagined future with every aspect they desire: different times of the day and, different times of the year with their imagined users. Architects are now able to communicate with people who may have no education about architecture and who do not understand traditional architectural drawings. With such strong graphics, laymen can now understand a designer's idea.

However, when that strong graphic tool which helps to create an *imagined future* helps us to visualize the *past* in a way that their architects, builders and users would have done was applied to the city of Aphrodisias and the Sebasteion, difficulties were encountered and decisions had to be made about arising questions. Starting with the missing information about the studied area, extensive studies were made not only to gather information but also to represent that merged information at hand. Even though bringing various disciplines together to achieve the kind of result presented in the study is a real challenge, this will hopefully help us to understand or get closer to understanding the impact of buildings such as the Sebasteion and the mind of their users and builders.

Although the result of the models created for Aphrodisias in this thesis are eye appealing to the viewers in a way that has never been possible before with other visualization techniques, it is really important to emphasize what kind of information was used in this procedure and more importantly, how the missing information was represented, since the amount of missing information defined the accountability of the result. There is also an indefinite loop between modeling and research for the modeling process which will help us to understand these urban settings in a better way. The thesis shows that every reliable model will help us to ask new questions - that were not possible before - in order to get closer to understanding the impact of the ancient settings and the procedures of design, these new questions will in turn generate new knowledge.

As a final word, one must stress that digital reconstructions are not time machines that will take the viewers back in time. They are an alternative way to experience and explain the dynamics of architecture which has to be handled with care. If not, they might end in a dramatic but disastrous result that will echo in the future.

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APPENDICES

A. FIGURES

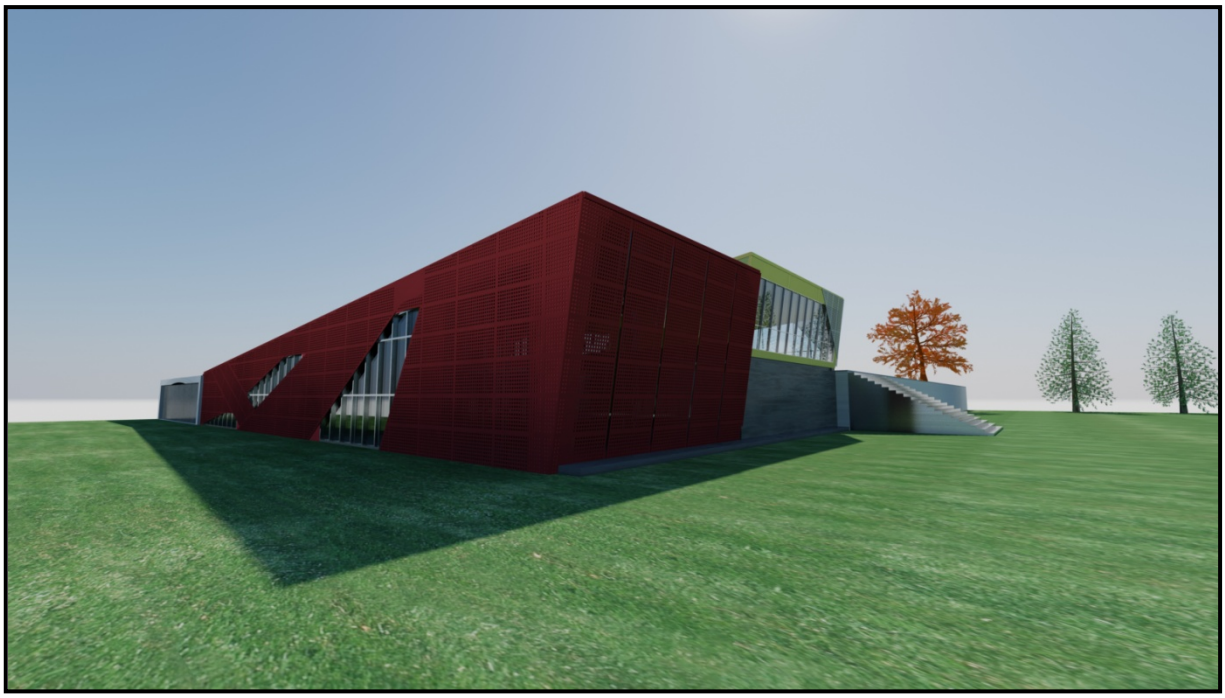


Figure 1 - Prospected perspective view of a design project during daytime (image from personal portfolio of author)

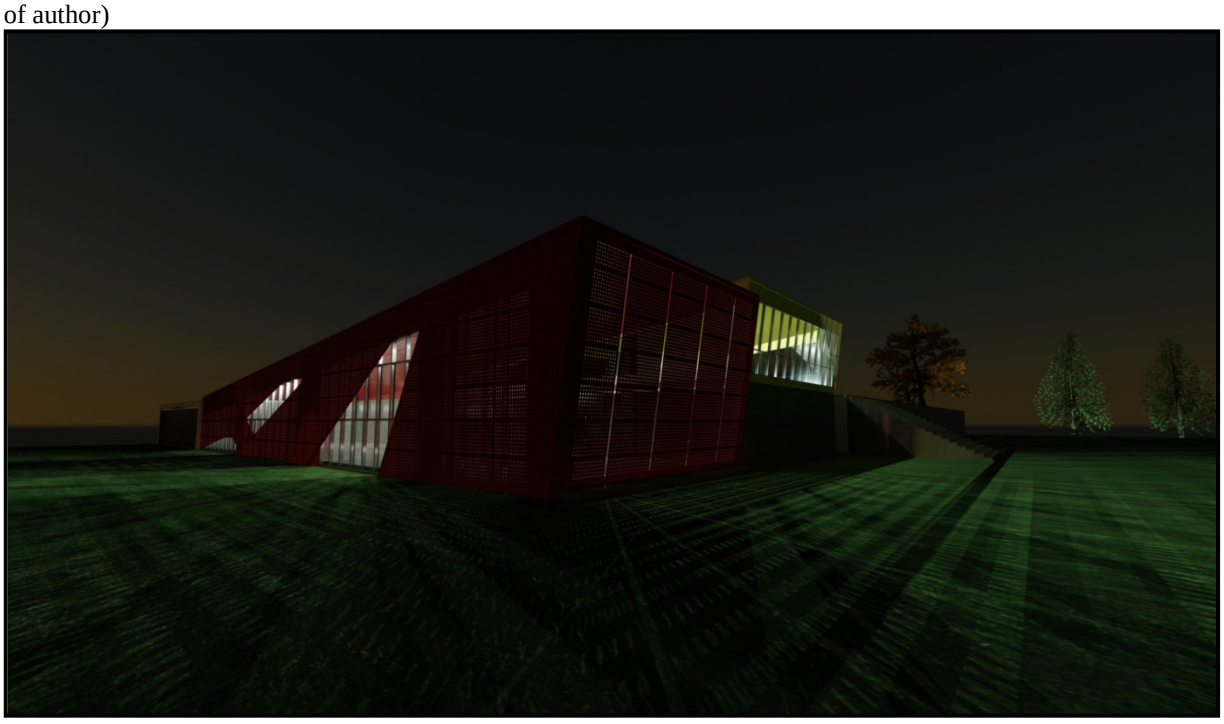


Figure 2 - Prospected perspective view of a design project during night-time (image from personal portfolio of author)

Figure 3 - Panoramic view of the city over the theater hill (author)

Figure 4 - View of the Sebasteion in 2005 (author)

Figure 5 - Panoramic view of the South Portico of the Sebasteion (author)

Figure 6 - Panoramic view of the North Portico of the Sebasteion (author)

Figure 7 - SE corner of the South Portico of the Sebasteion in 2010 July (author)

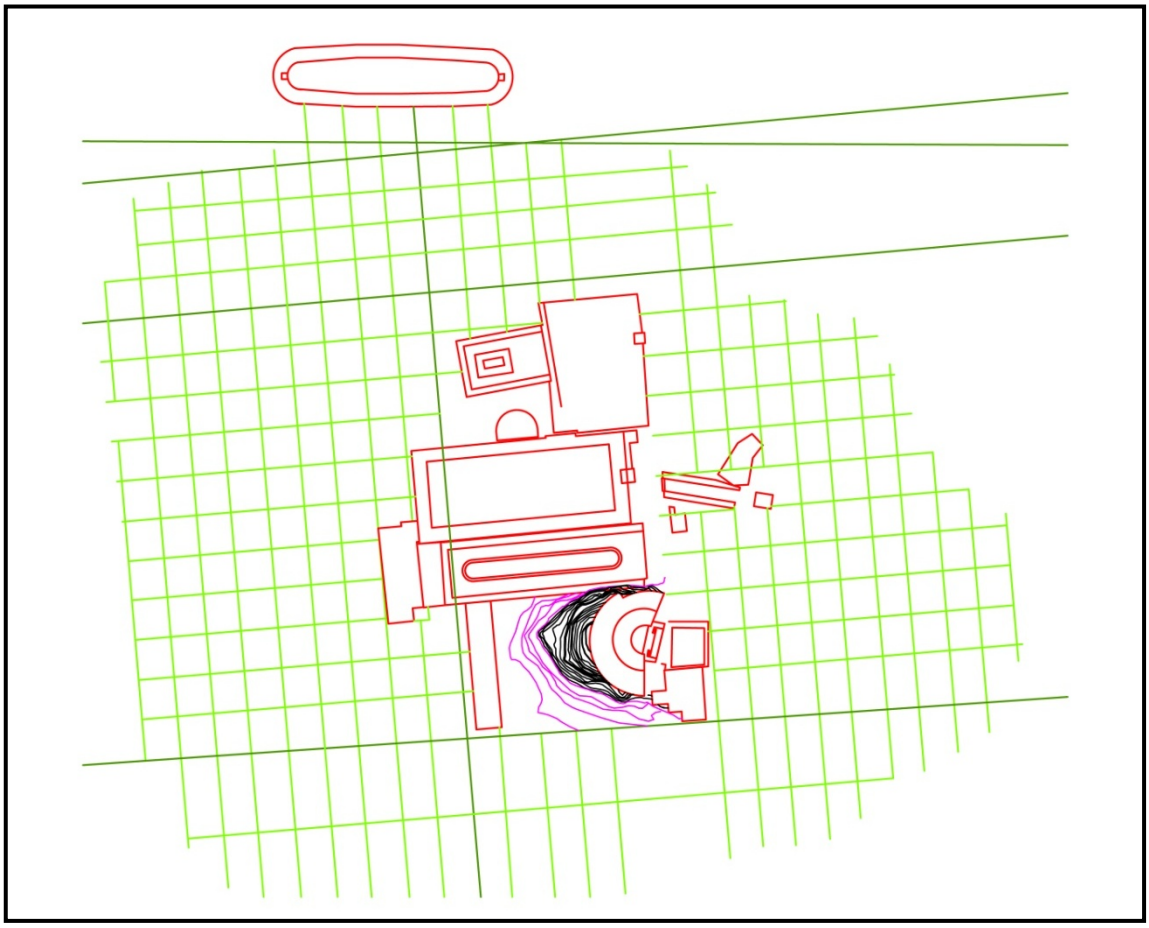


Figure 8 - Modeling template for the model of Aphrodisias

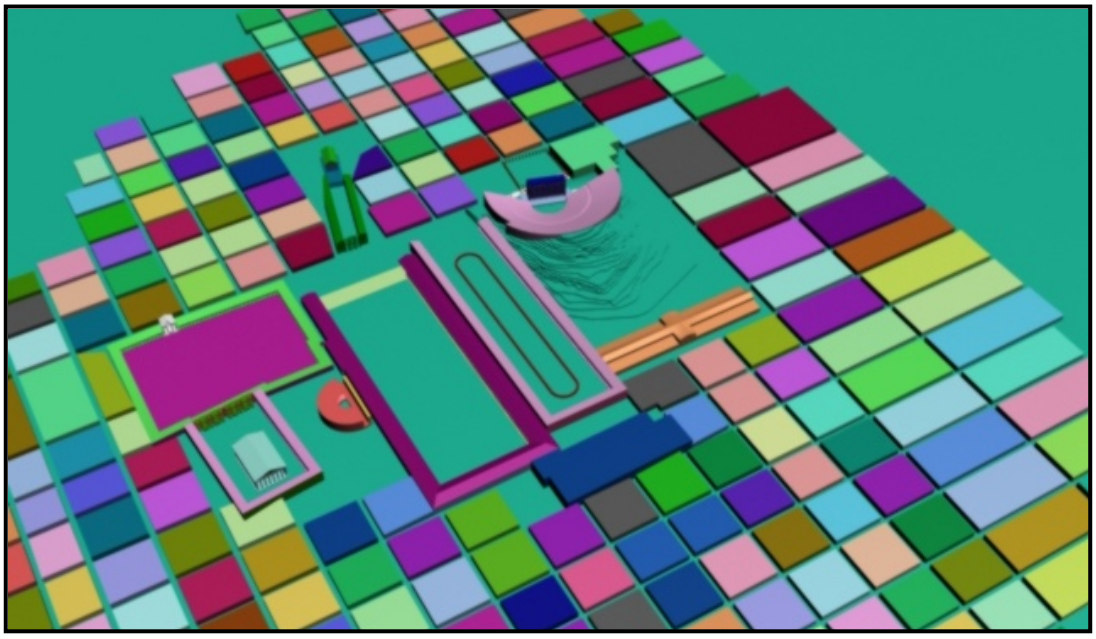


Figure 9 - Perspective view from the model of Aphrodisias without any material modification during the modeling process

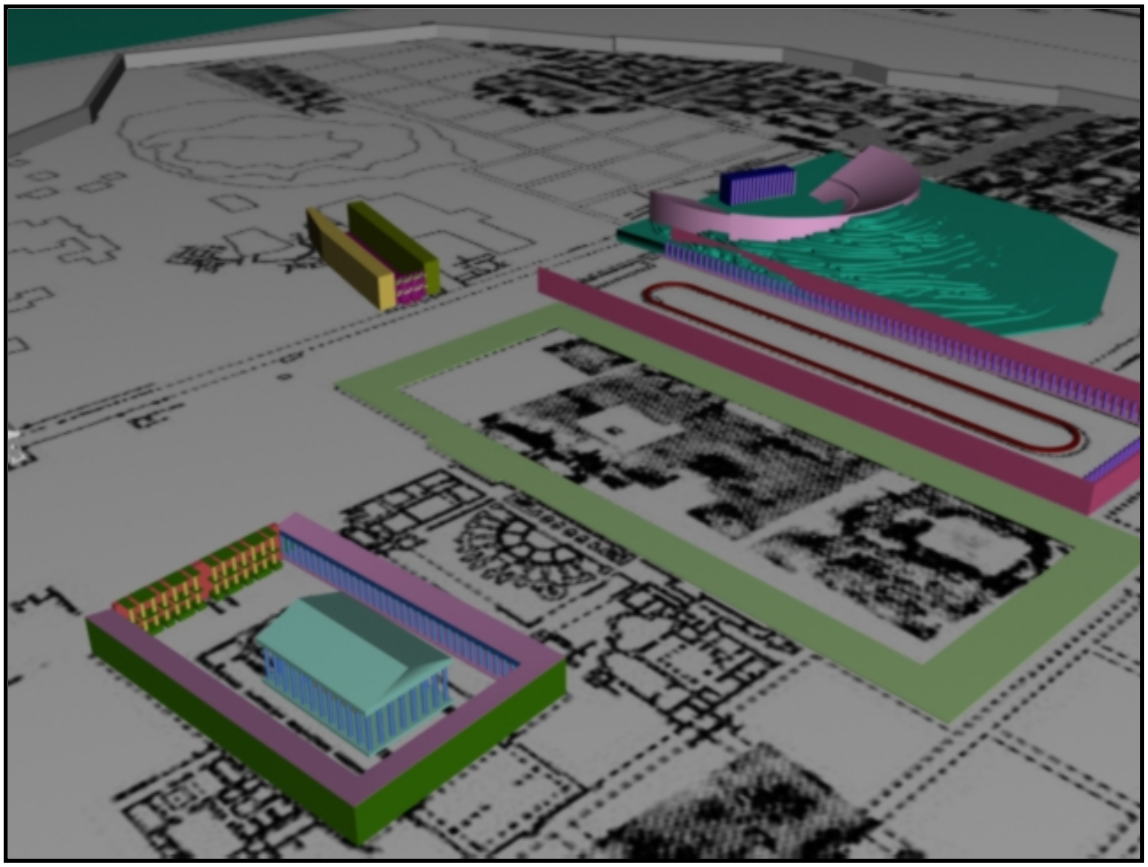


Figure 10 - Perspective view from the model of Aphrodisias without any material modification during the modeling process

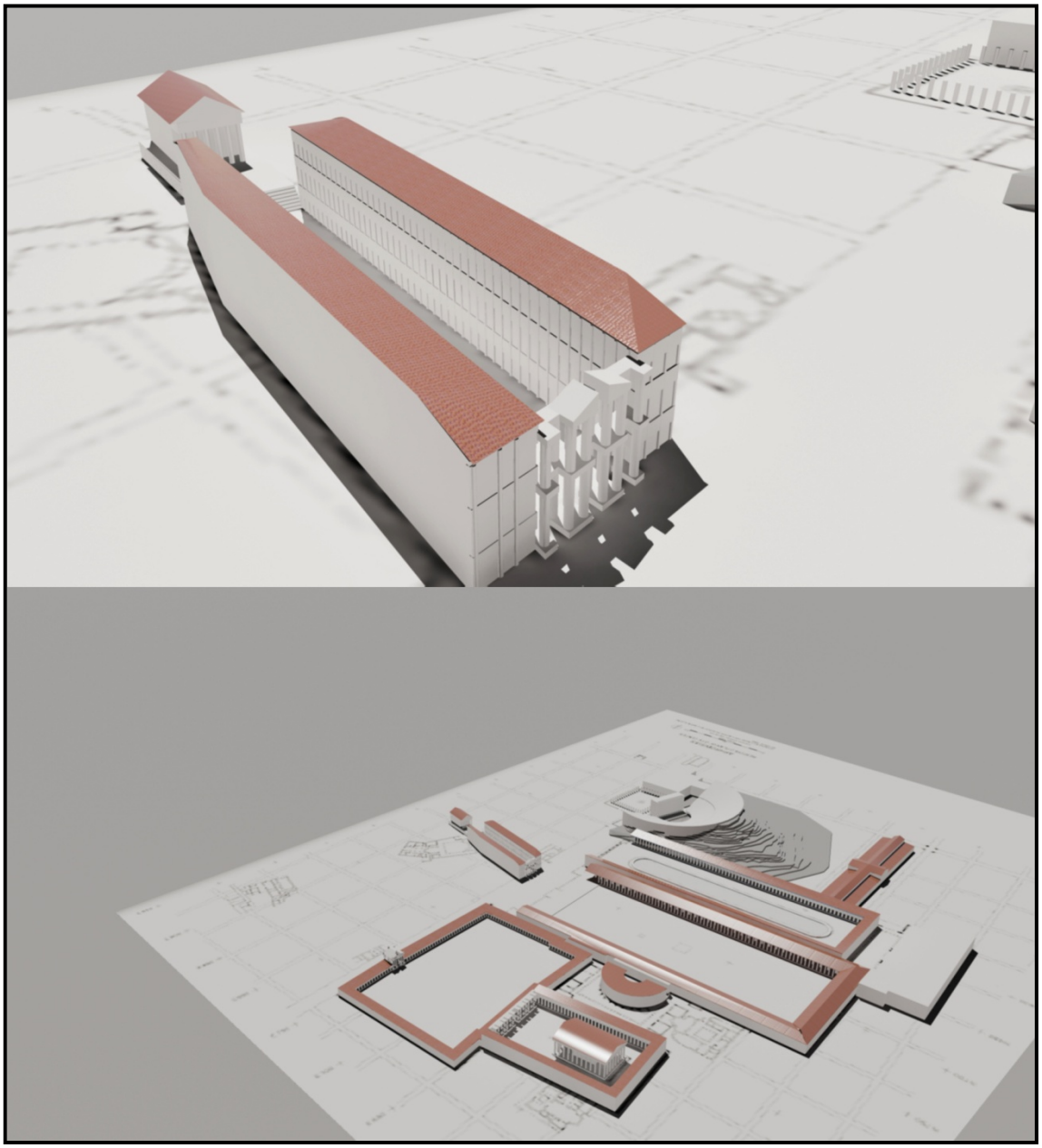


Figure 11 - Sebasteion at different zooming levels at the same model during the modeling process.

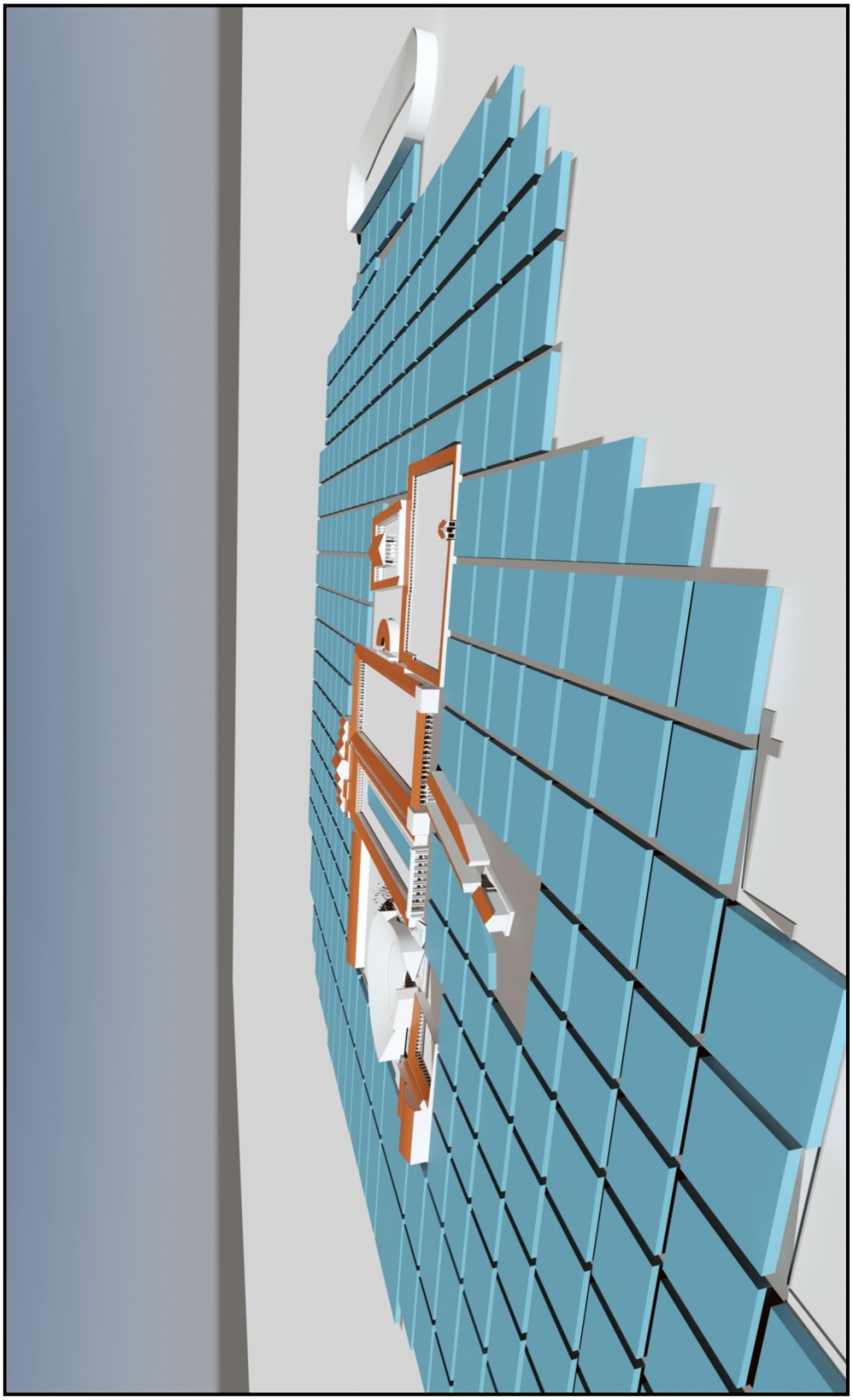


Figure 12 - Perspective view from the model of Aphrodisias with prospected grid pattern

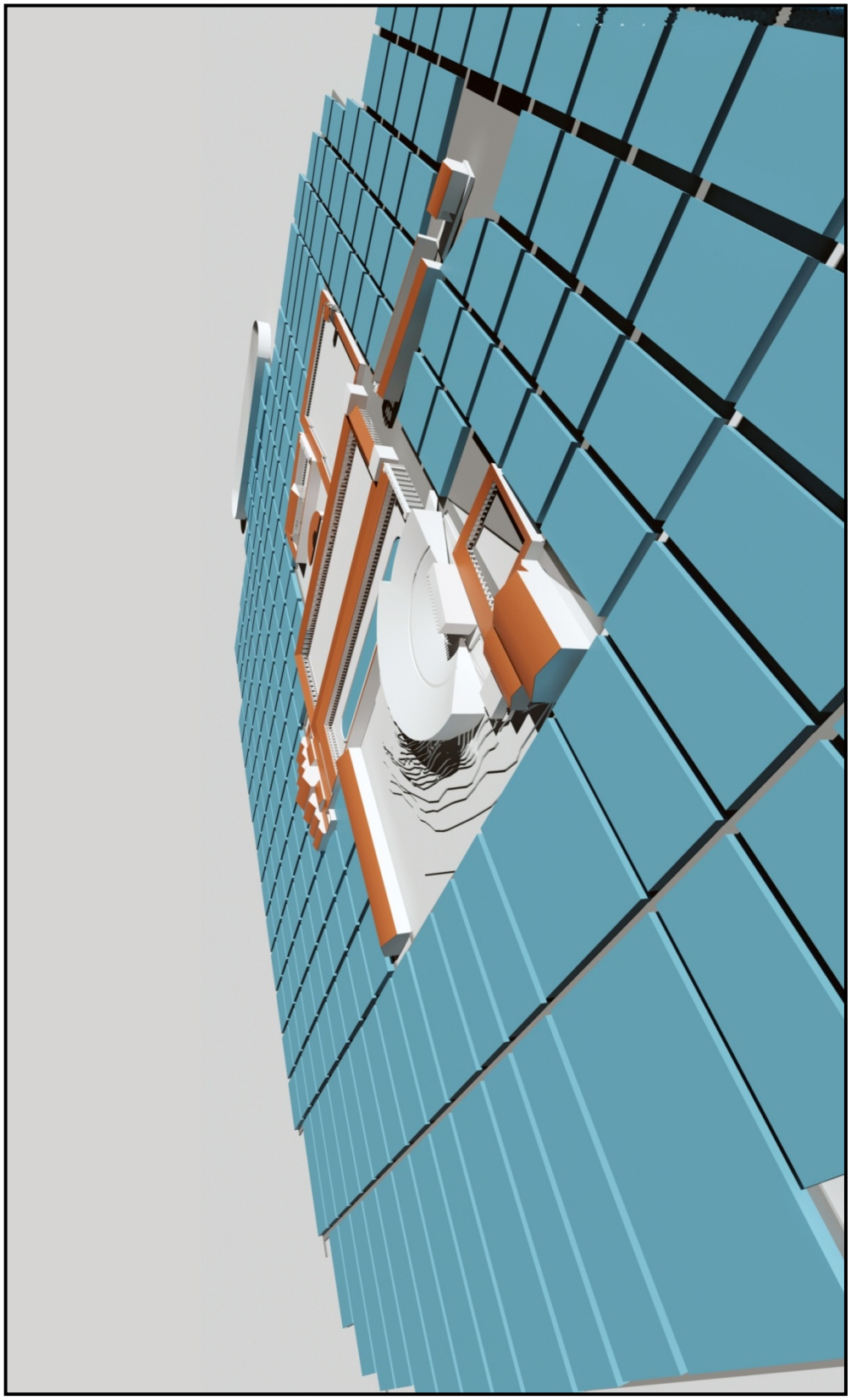


Figure 13 - Perspective view from the model of Aphrodisias with prospected grid pattern

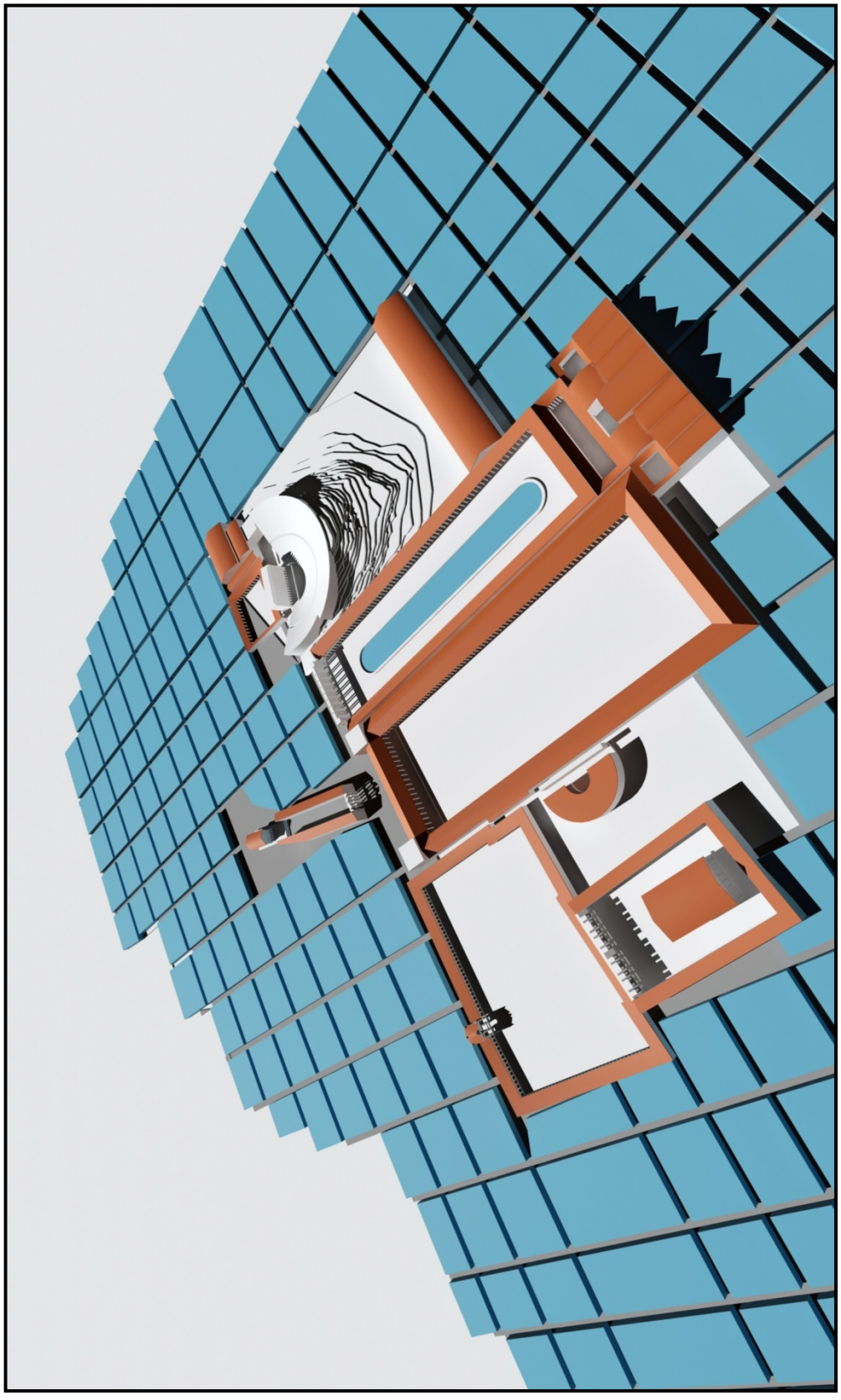


Figure 14 - Perspective view from the model of Aphrodisias with prospected grid pattern

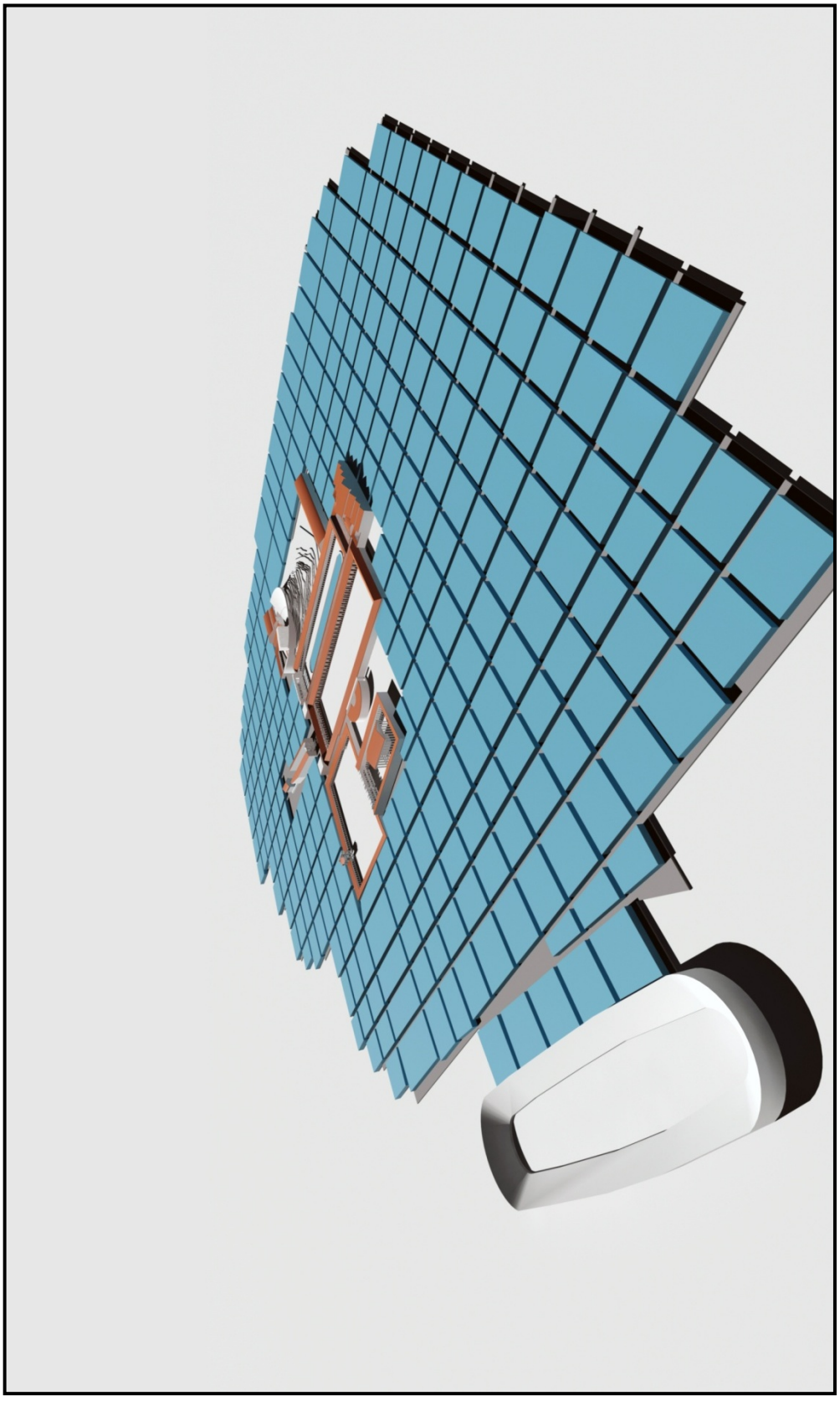


Figure 15 - Perspective view from the model of Aphrodisias with prospected grid pattern

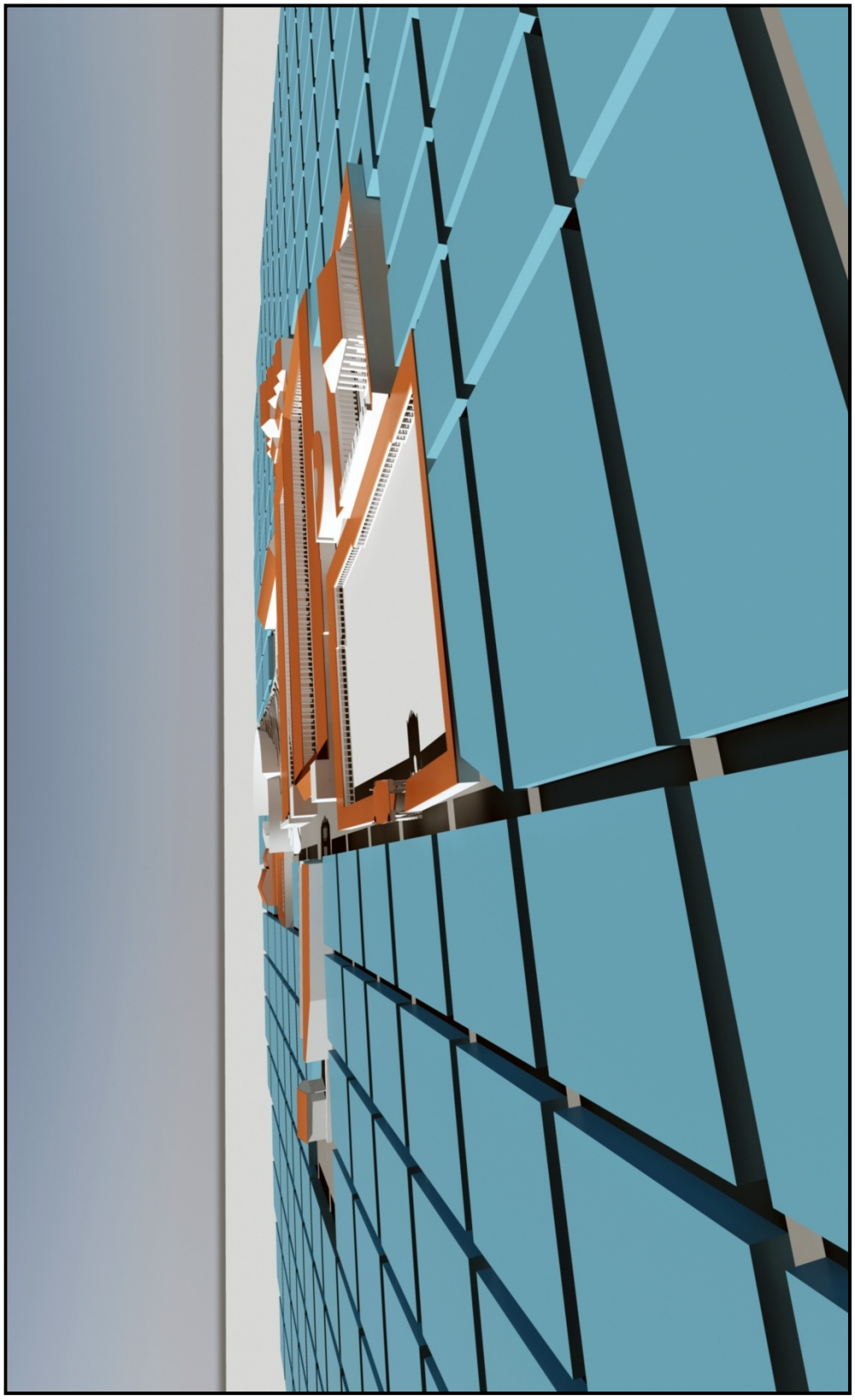


Figure 16 - Perspective view from the model of Aphrodisias with prospected grid pattern

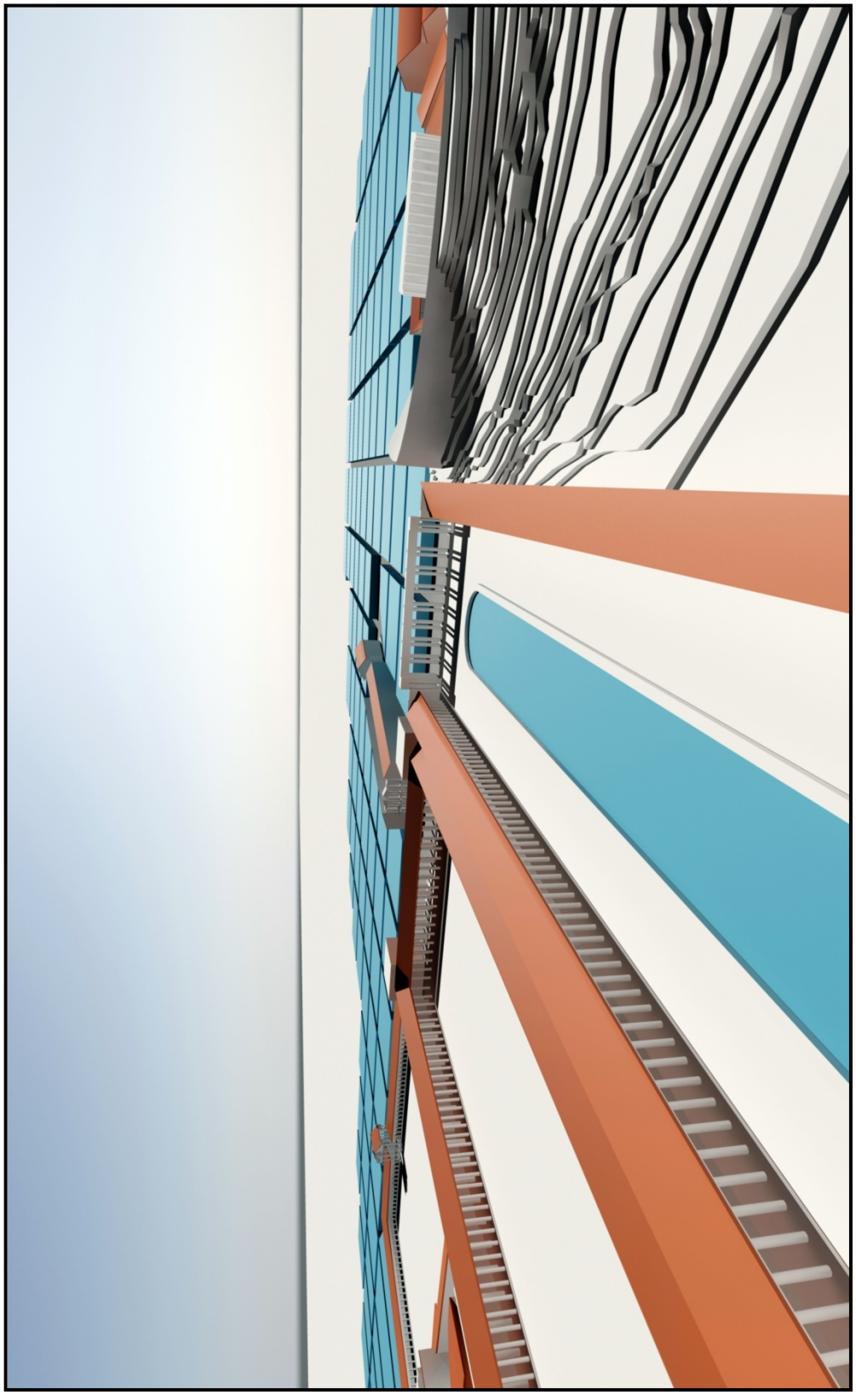


Figure 17 - Aphrodisias with prospected urban grid pattern –image from 3D model-

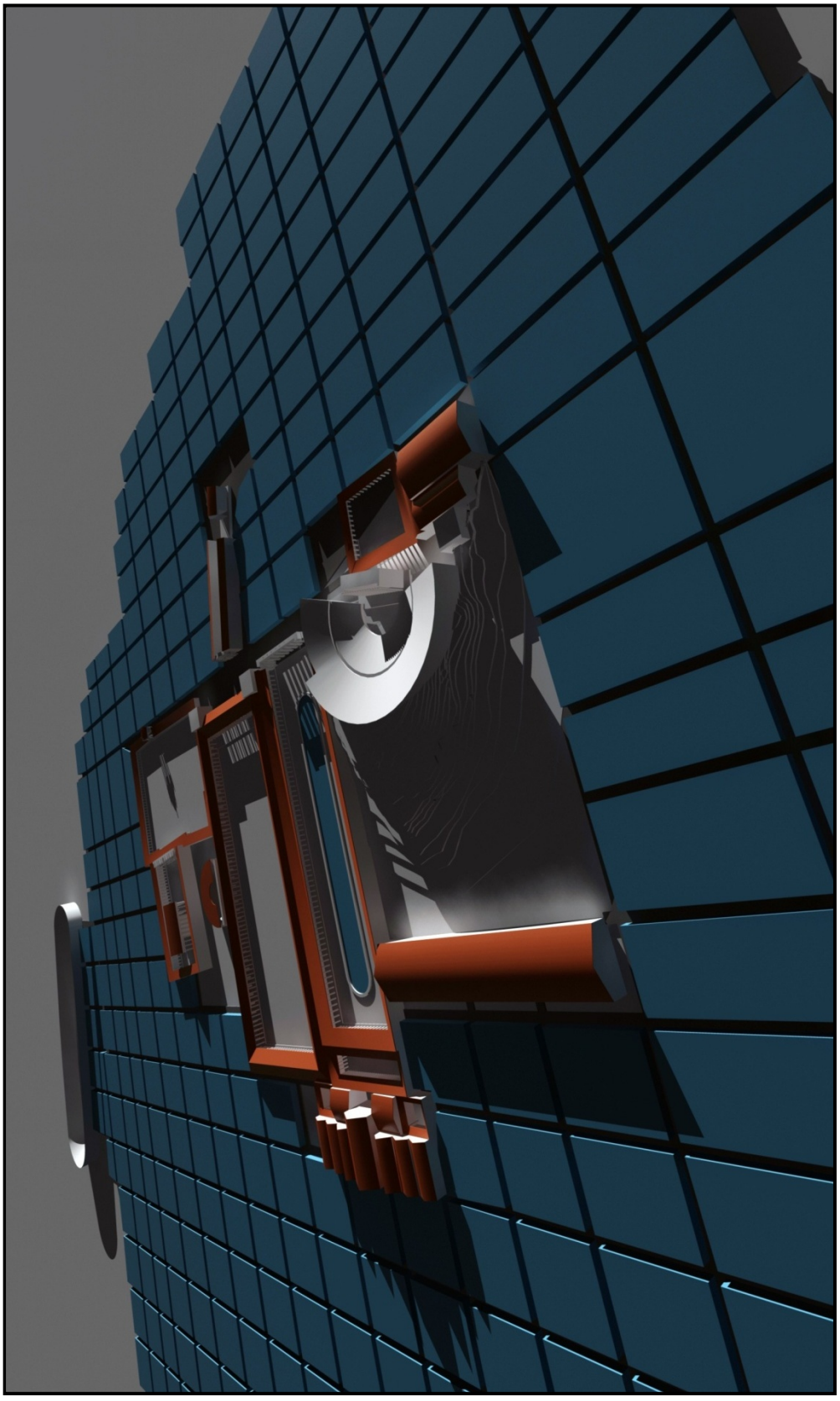


Figure 18 - Perspective view from the model of Aphrodisias with prospected grid pattern

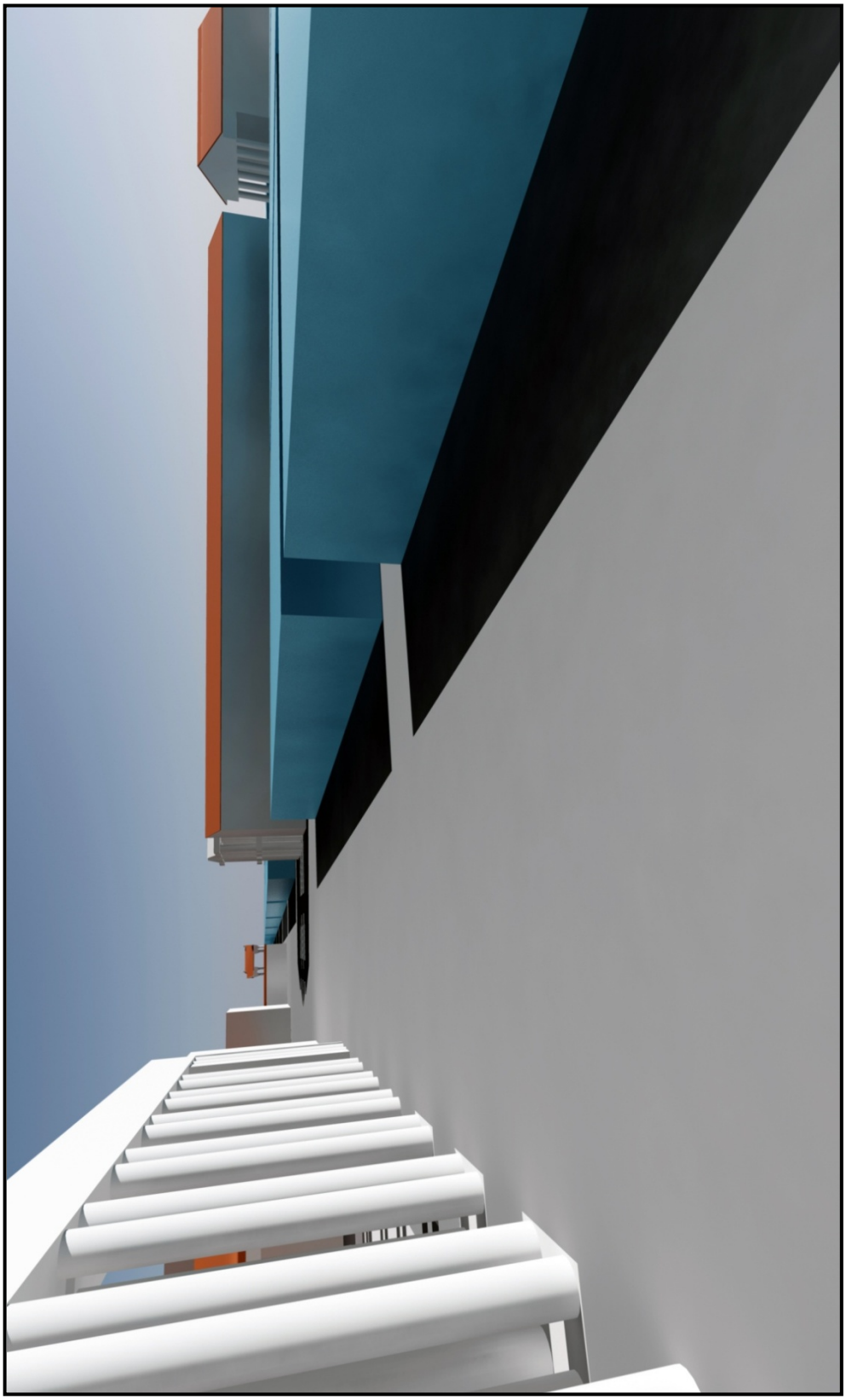


Figure 19 - Perspective view from the model of Aphrodisias with prospected grid pattern

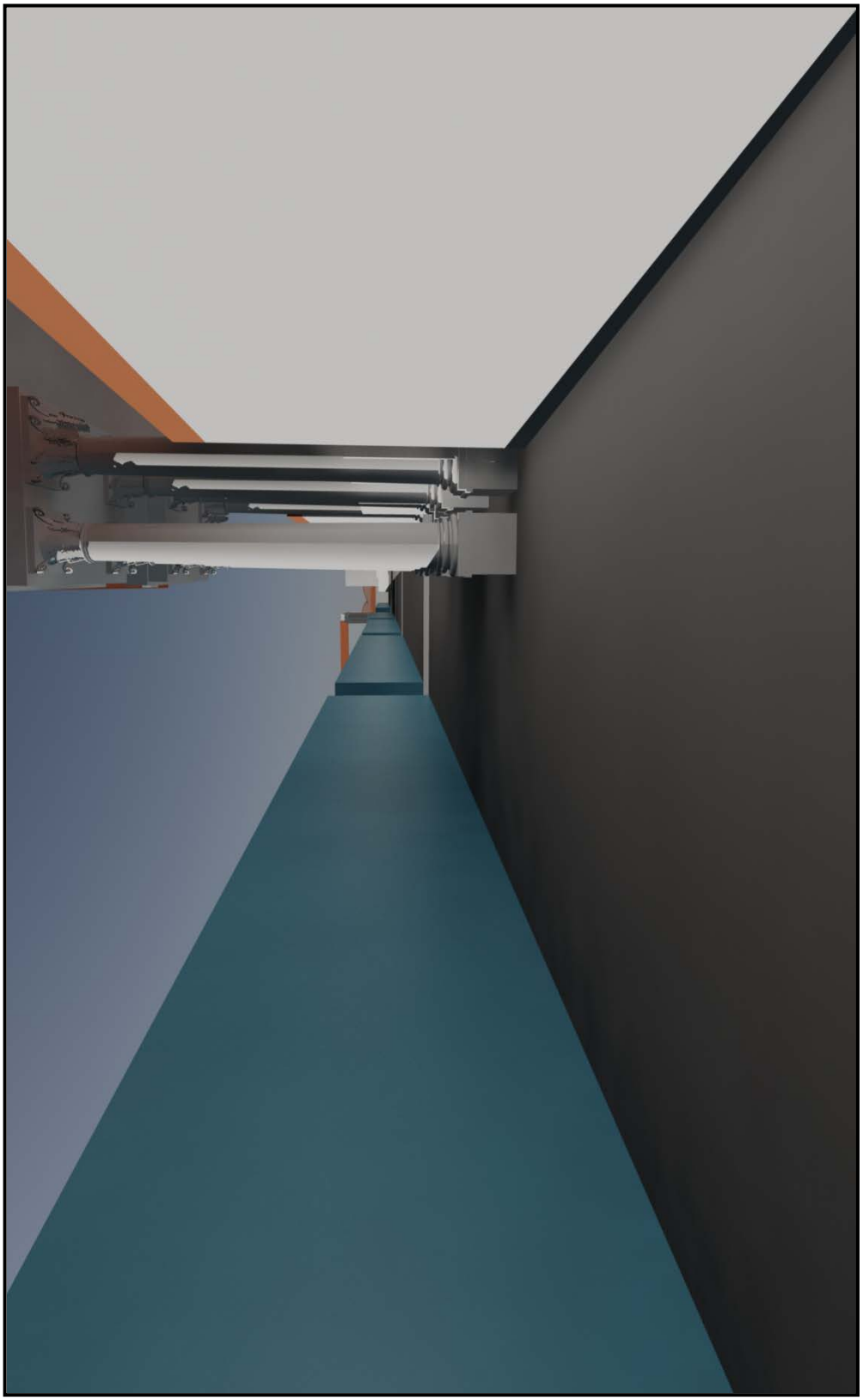


Figure 20 - Perspective view from the model of Aphrodisias with prospected grid pattern

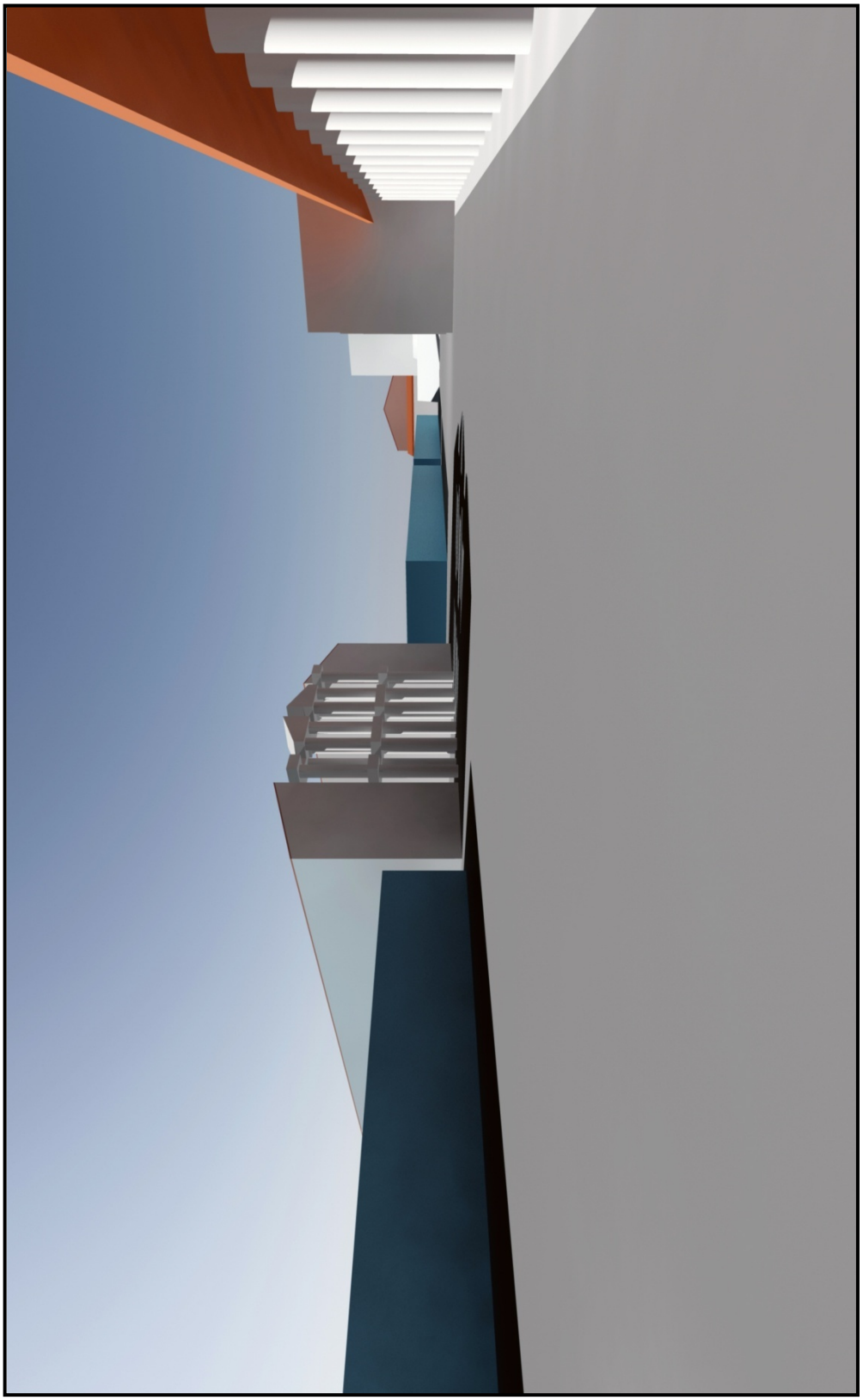


Figure 21 - Perspective view from the model of Aphrodisias with prospected grid pattern

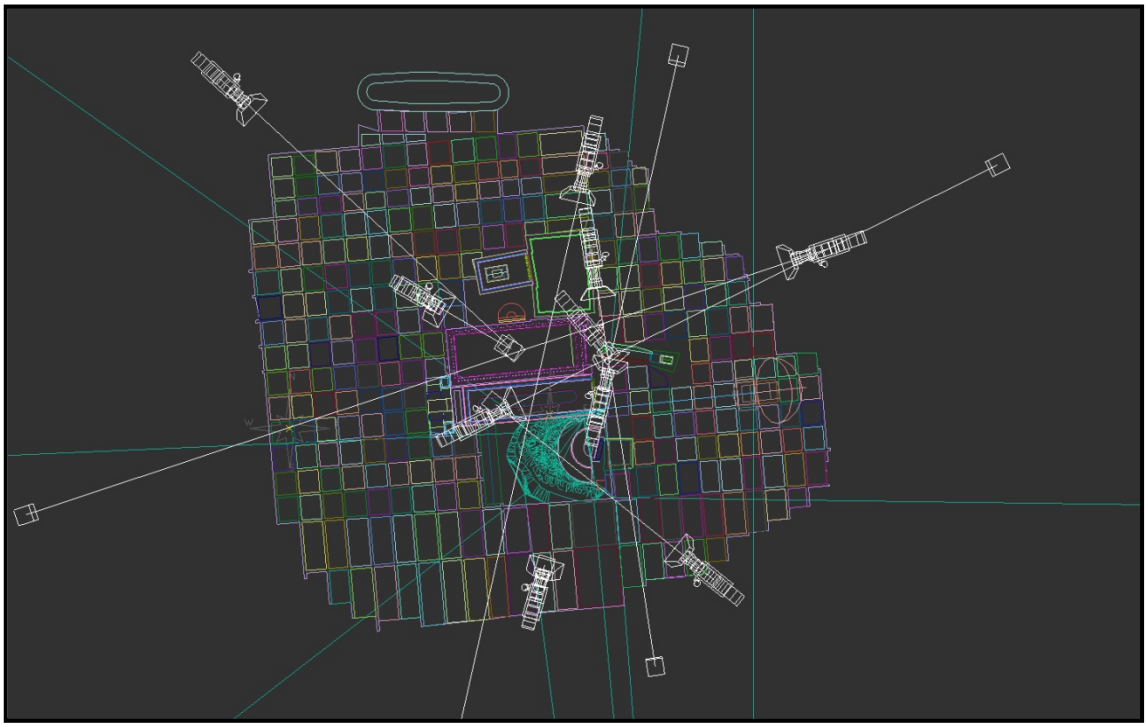


Figure 22 - Overview of selected viewports from top view

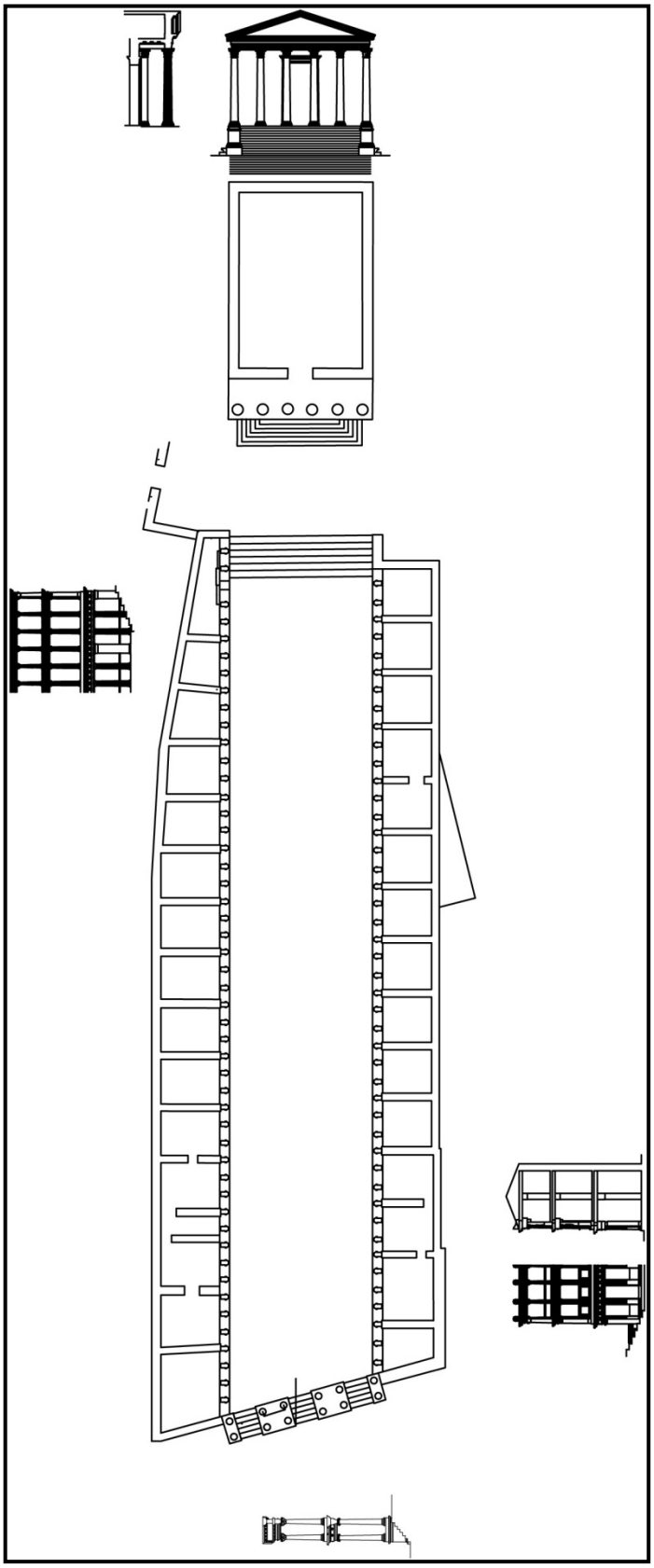


Figure 23 - Template drawing for 3D modeling process

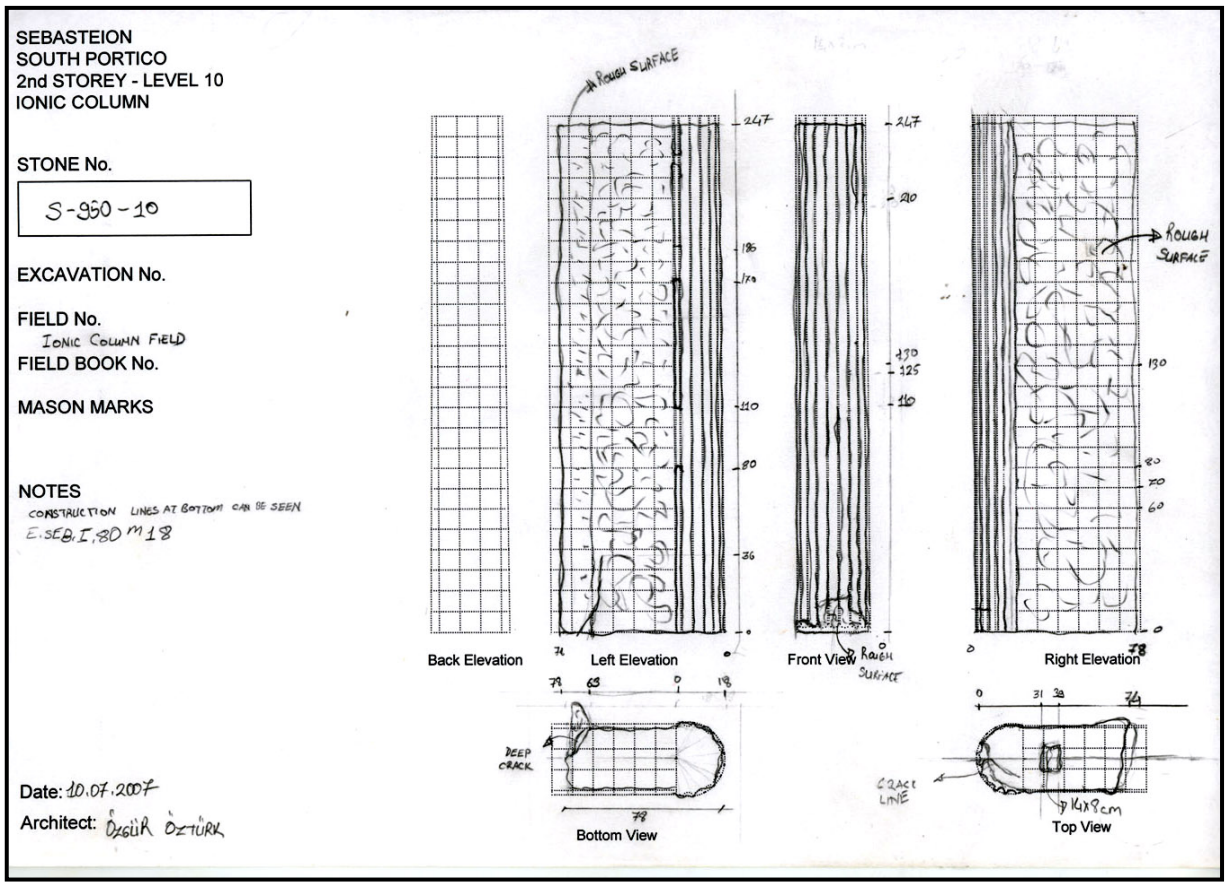


Figure 24 - S-950-10 Ionic Column field drawing

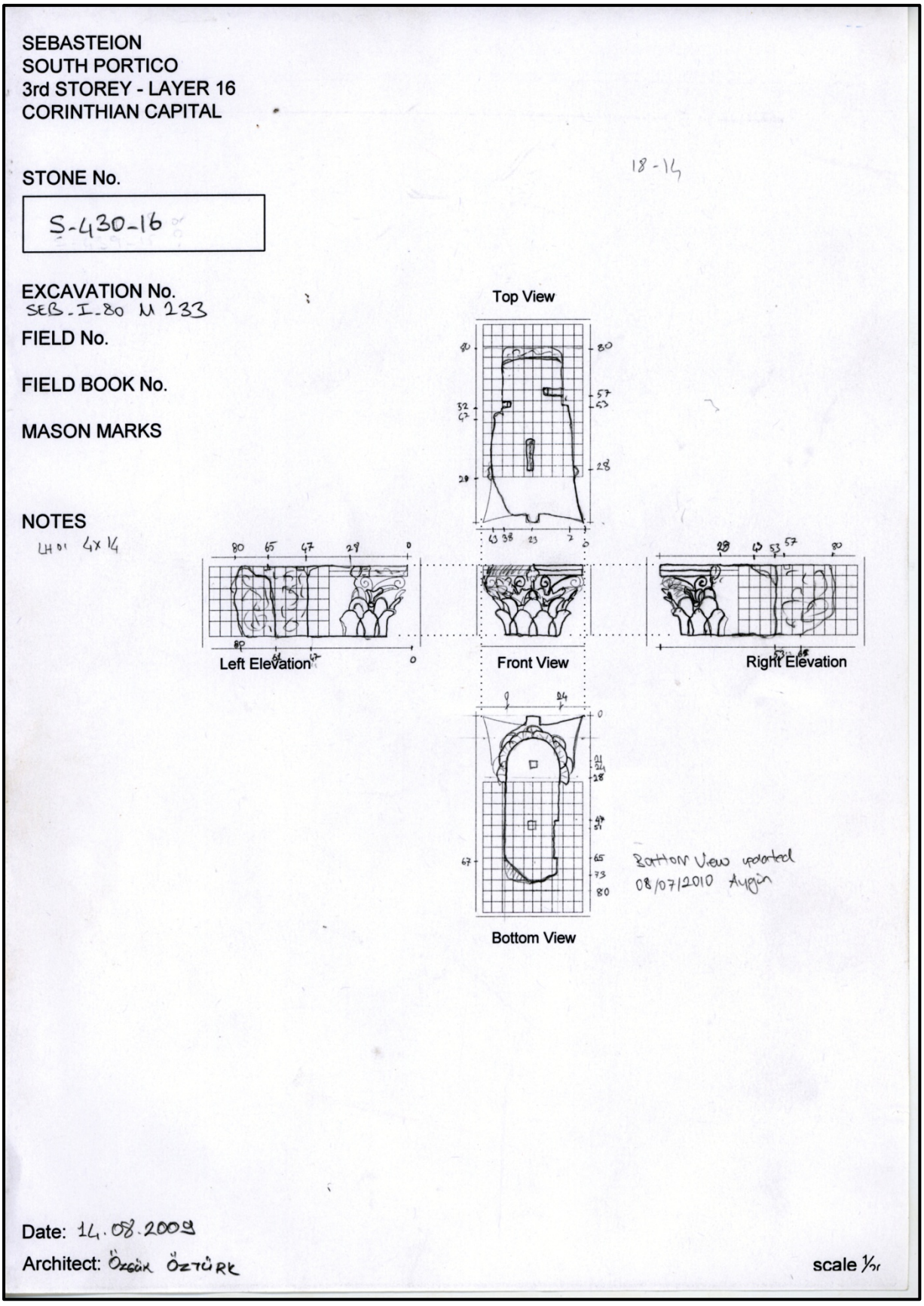


Figure 25 - S-430-16 Corinthian Column Capital field drawing

SEBASTEION
SOUTH PORTICO
1st STOREY-LAYER2
DORIC BASE

STONE No.

S. Portico 10

EXCAVATION No.

- in situ -
SEB-I-80

FIELD No.

-

FIELD BOOK No.

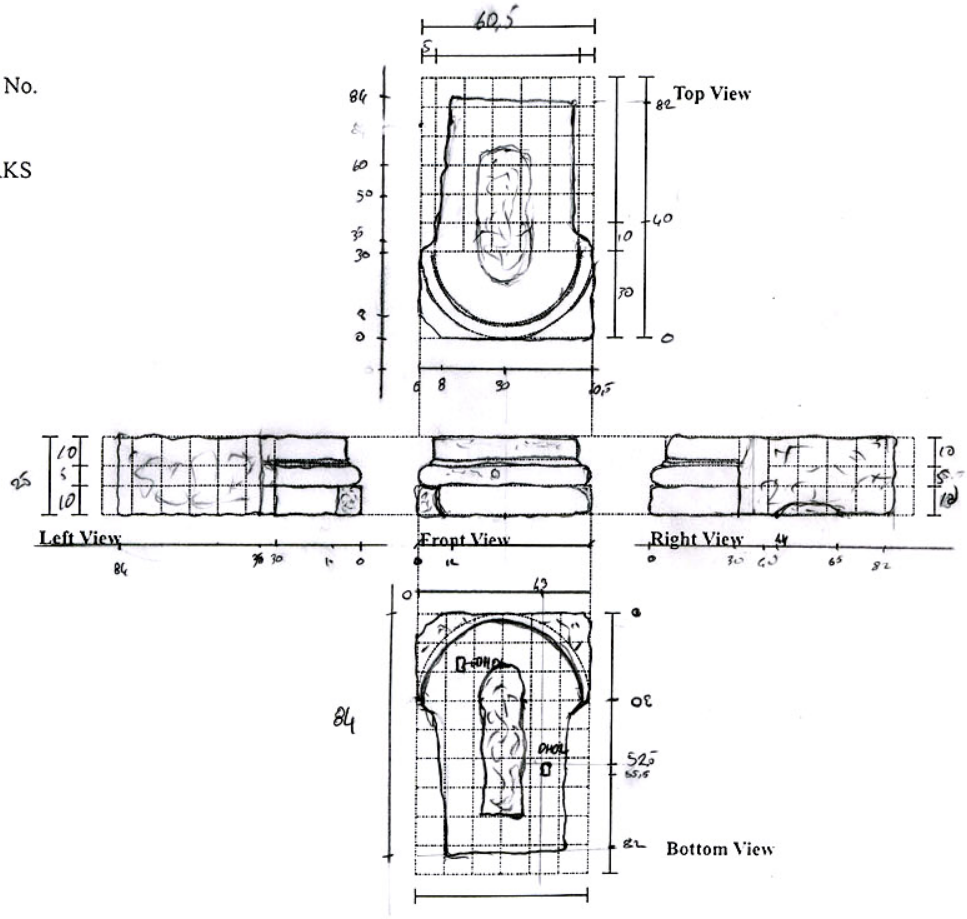
-

MASON'S MARKS

-

NOTES

DH01 315x225cm
DH02 35 x 2



date: 12, JULY, 2008

architect: ÖZGÜR ÖZTÜRK

Figure 26 - South Portico Column Base 10 field drawing

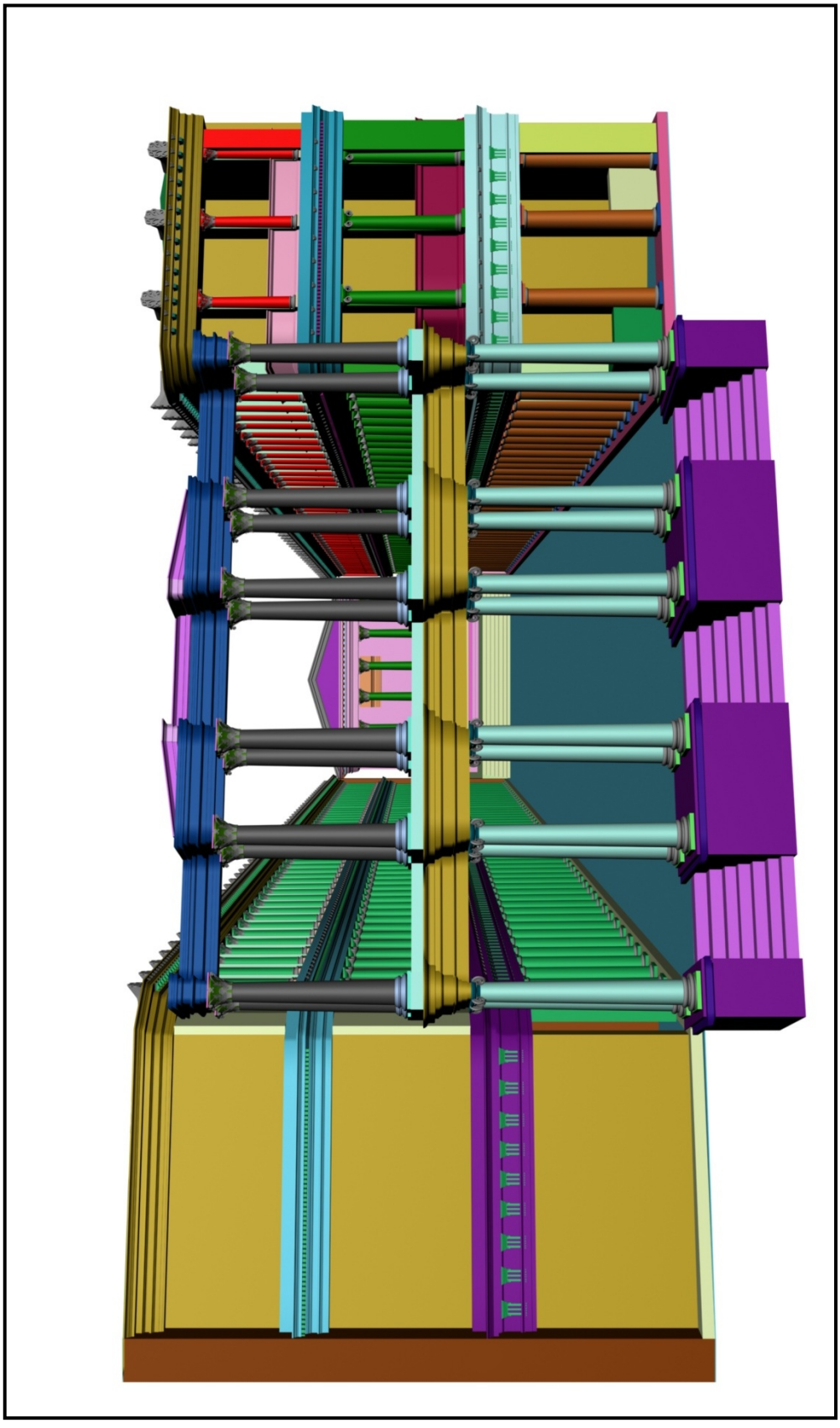


Figure 27 - The model of the Sebasteion without any color or texture modification

Figure 28 - The model of the Sebasteion South Portico elevation without any color or texture modification reliefs are not included in this image

Figure 29 - Three steps of a Doric Column Base of the model. From left to right; Field Drawing, Wireframe Model and the Final Product

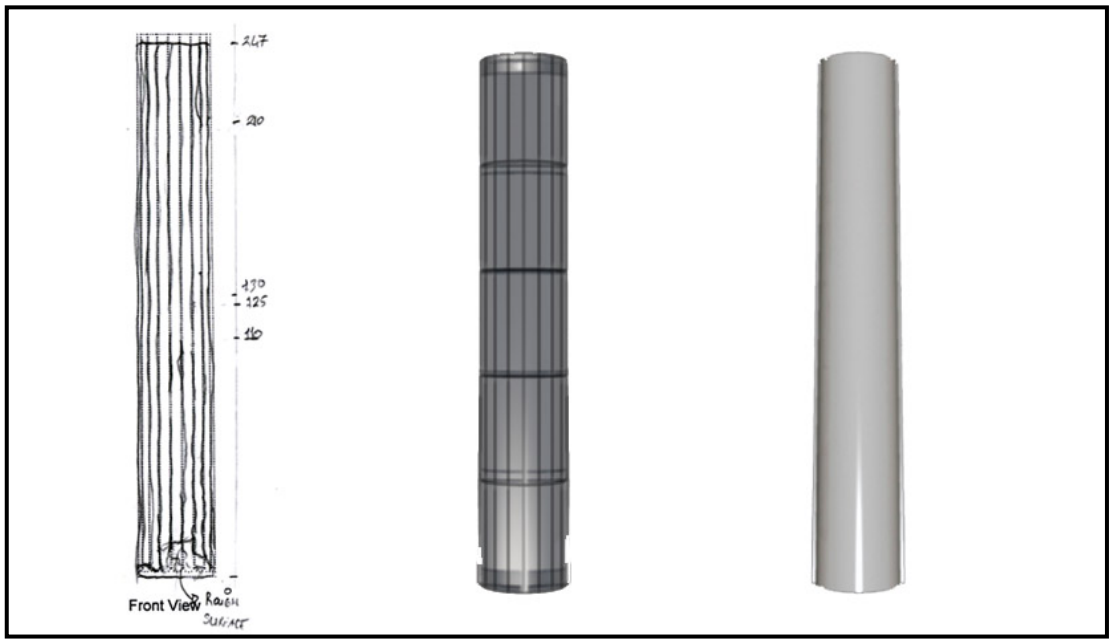


Figure 30 - Three steps of an Ionic Column of the model. From left to right; Field drawing, Wireframe Model and the Final Product

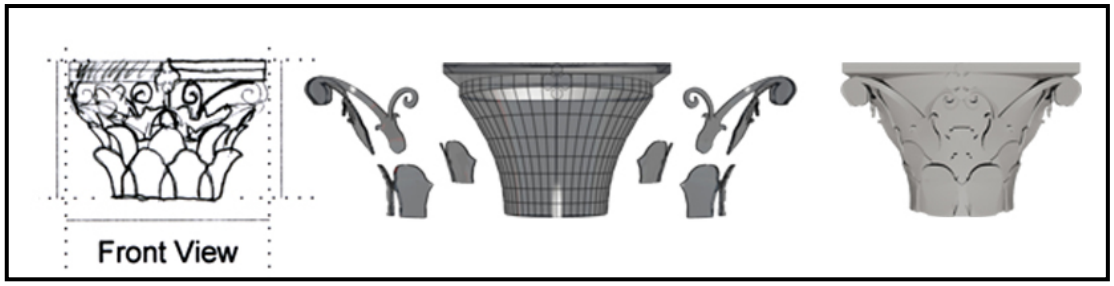


Figure 31 - Three steps of a Corinthian Capital of the model. From left to right; Field drawing, Wireframe Model and the Final Product

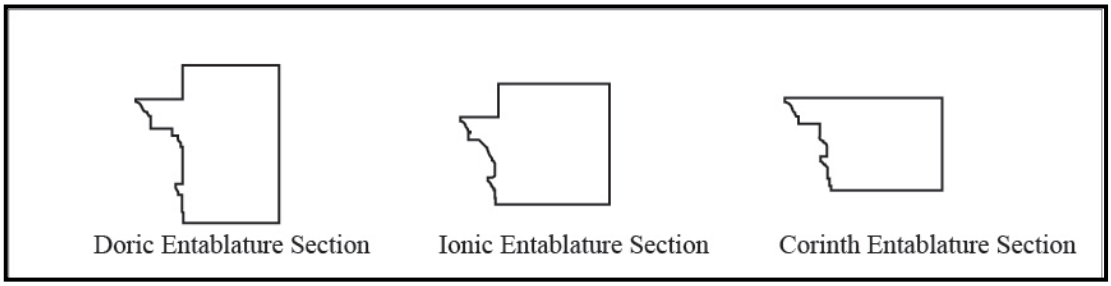


Figure 32 - Sections of the entablatures at the Sebasteion

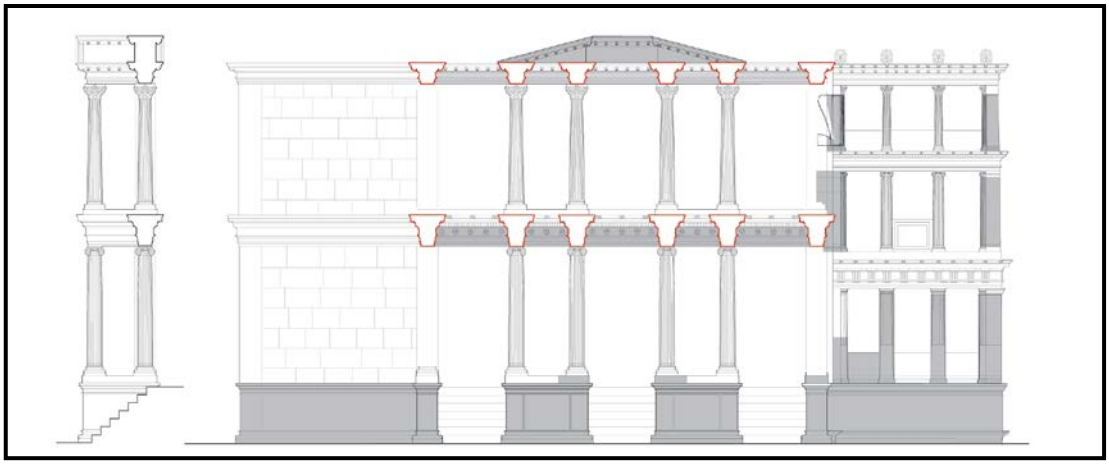


Figure 33 - Propylon of the Sebasteion and the collided corner (Felipe Rojas, Harry Mark and author)

Figure 34 - NW corner of South Portico with collided blocks on 3D model of the Sebasteion (reliefs are not included in this render)

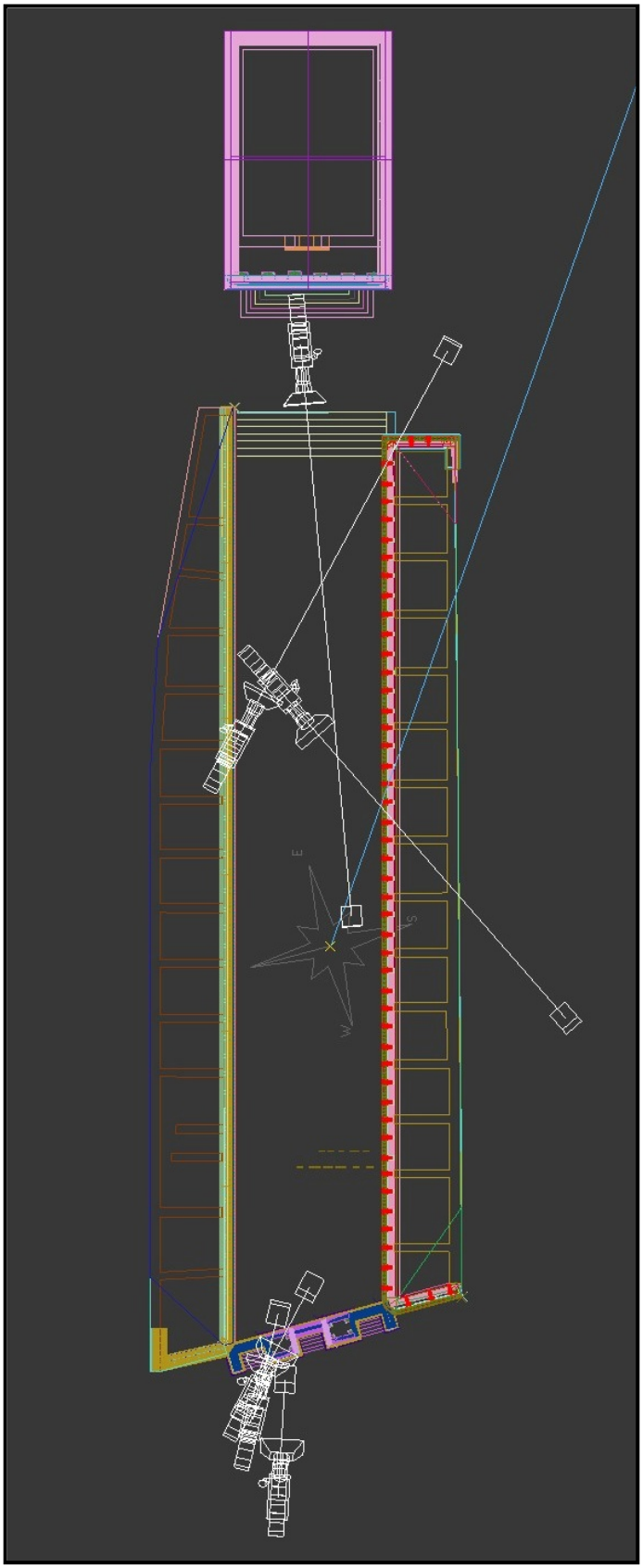


Figure 35 - Overview of selected viewports from top view

Figure 36 - Perspective view from the model of the Sebasteion

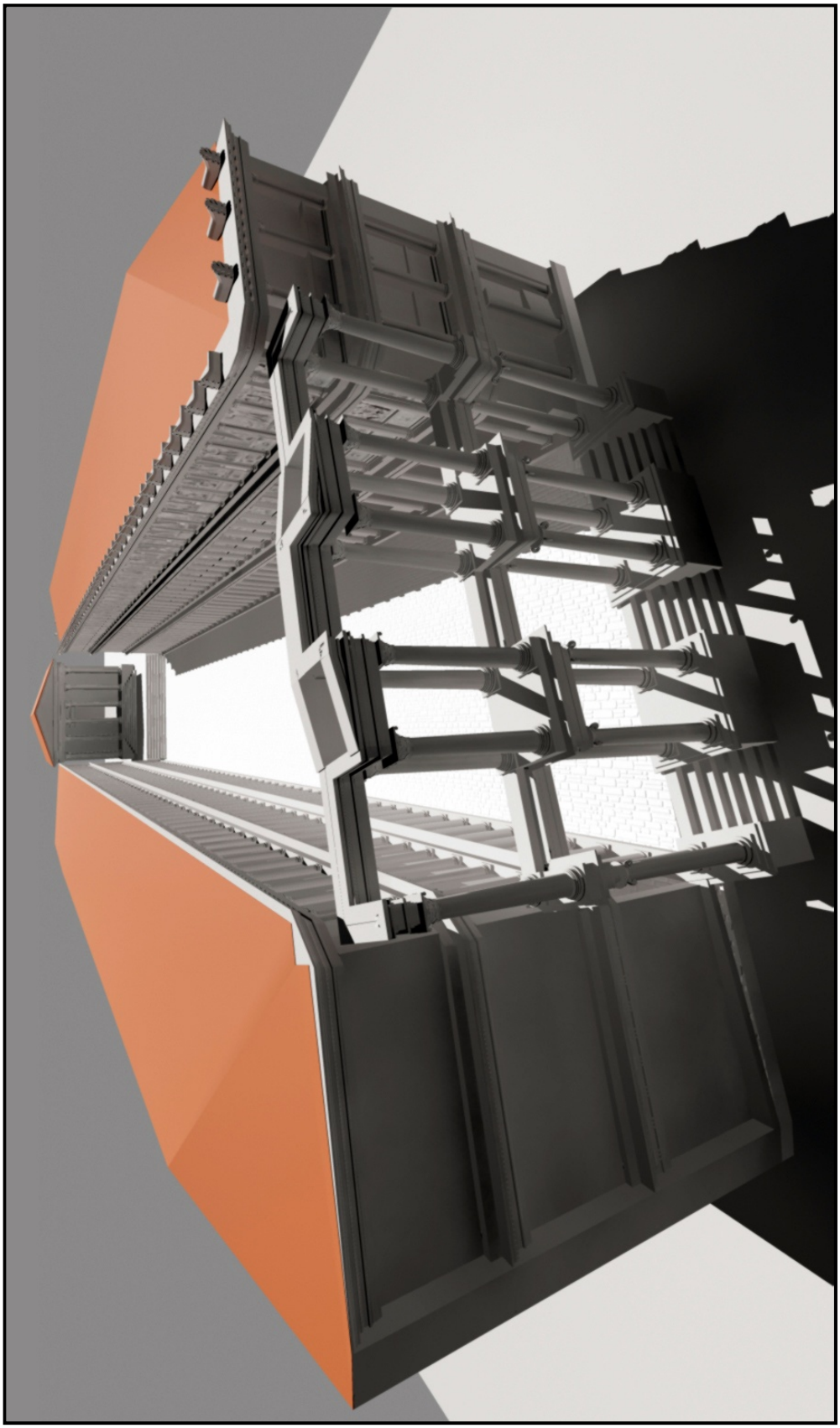


Figure 37 - Perspective view from the model of the Sebasteion

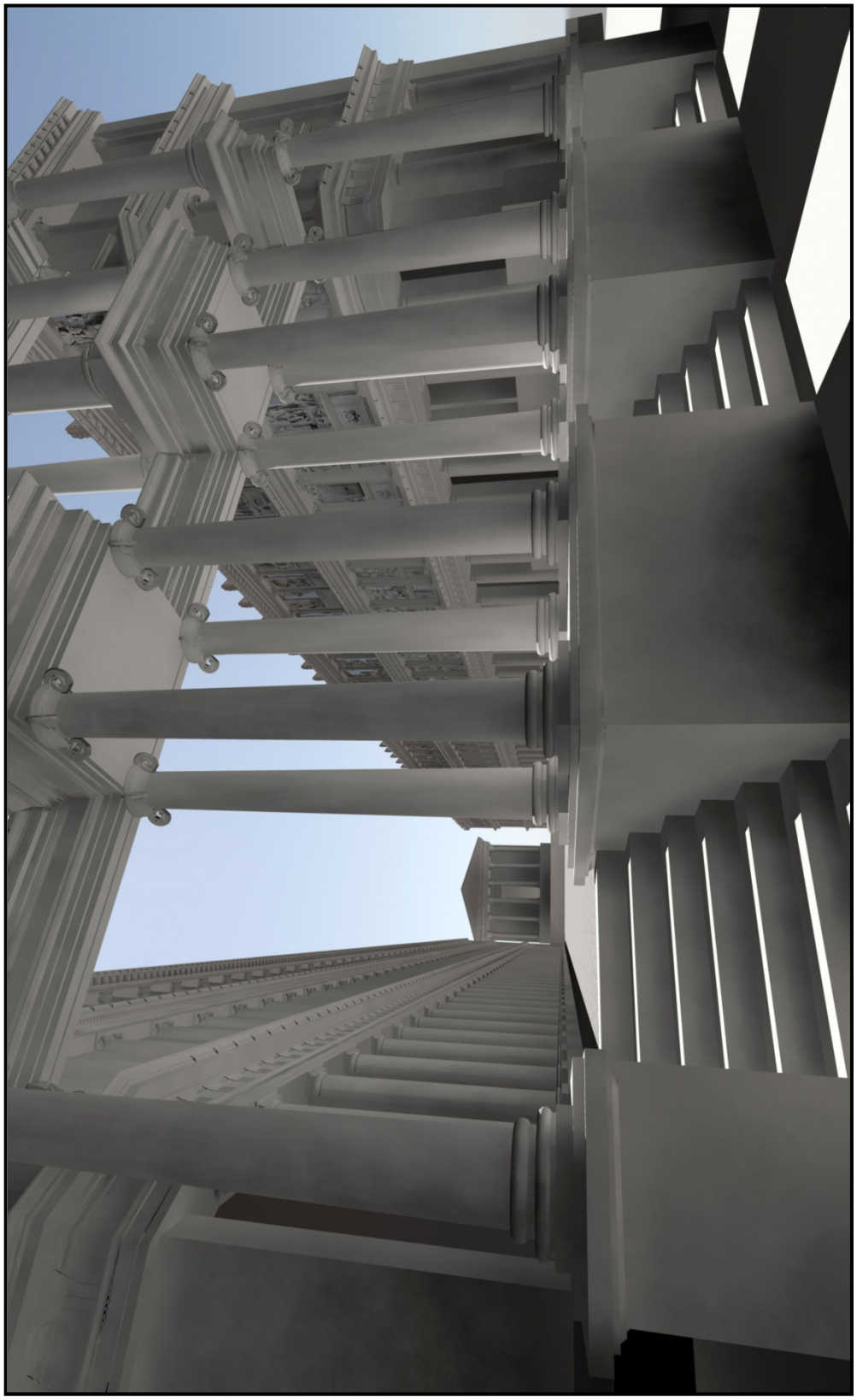


Figure 38 - Perspective view from the model of the Sebasteion

Figure 39 - Perspective view from the model of the Sebasteion

Figure 40 - Perspective view from the model of the Sebasteion

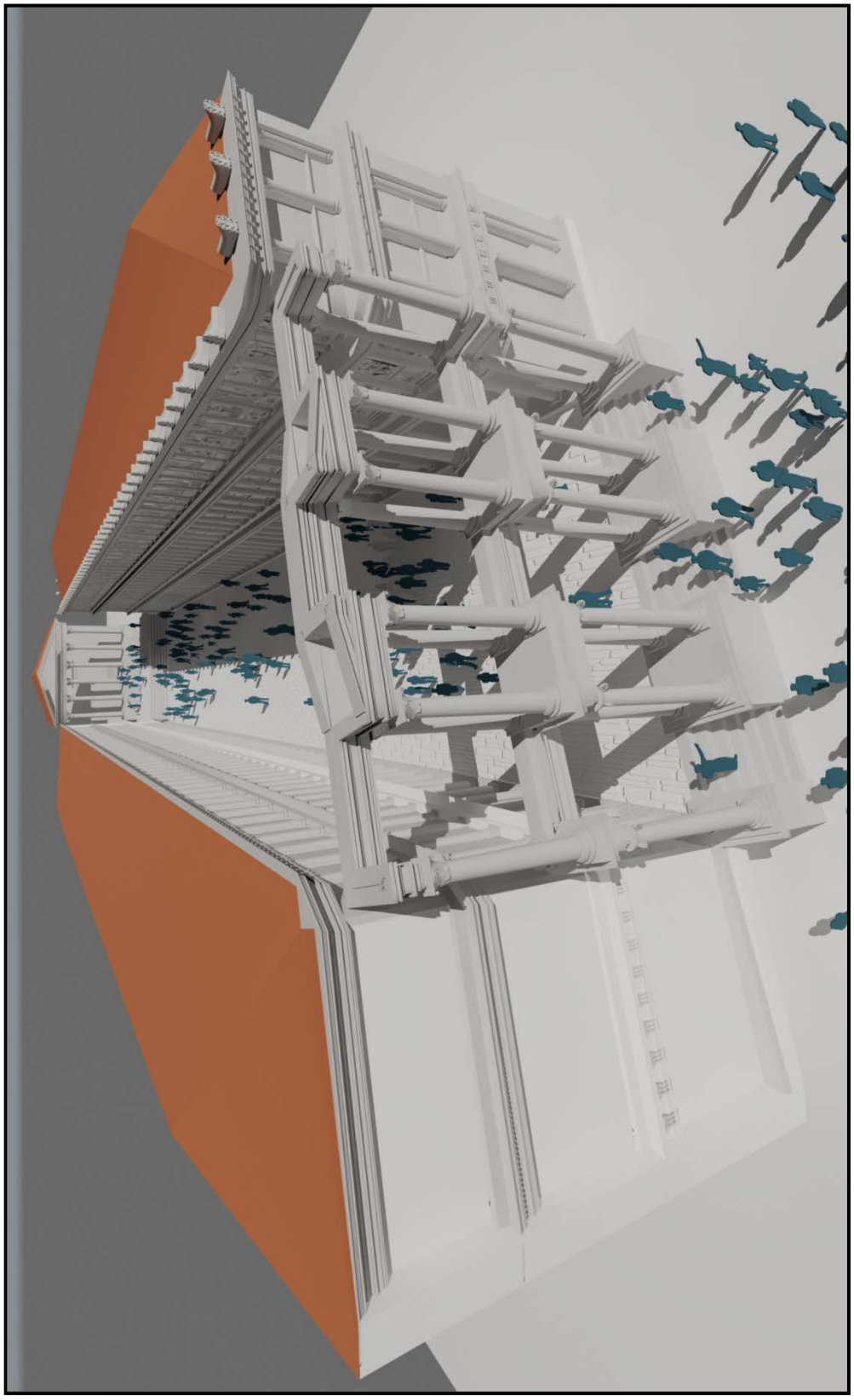


Figure 41 - Perspective view from the model of the Sebasteion

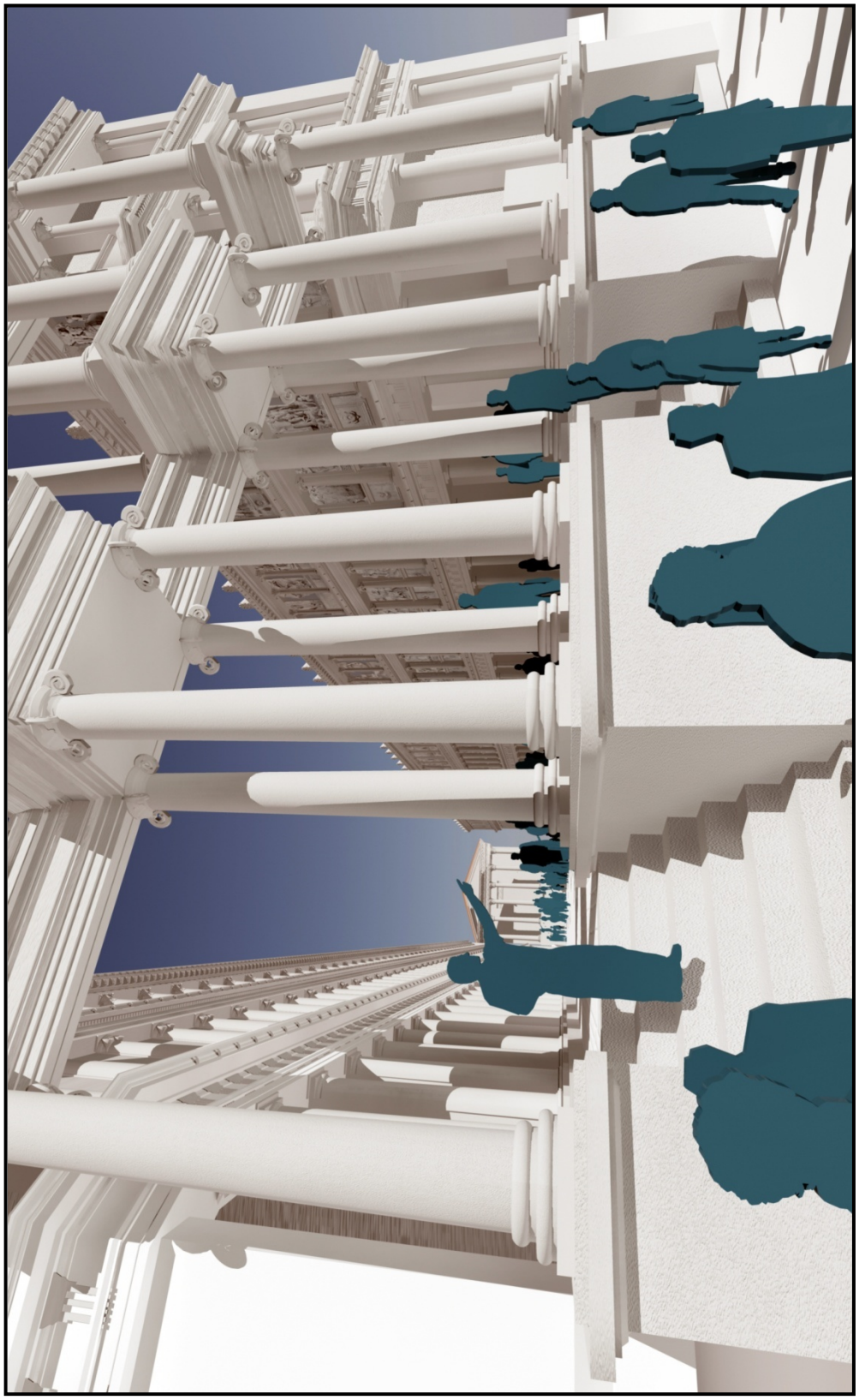


Figure 42 - Perspective view from the model of the Sebasteion

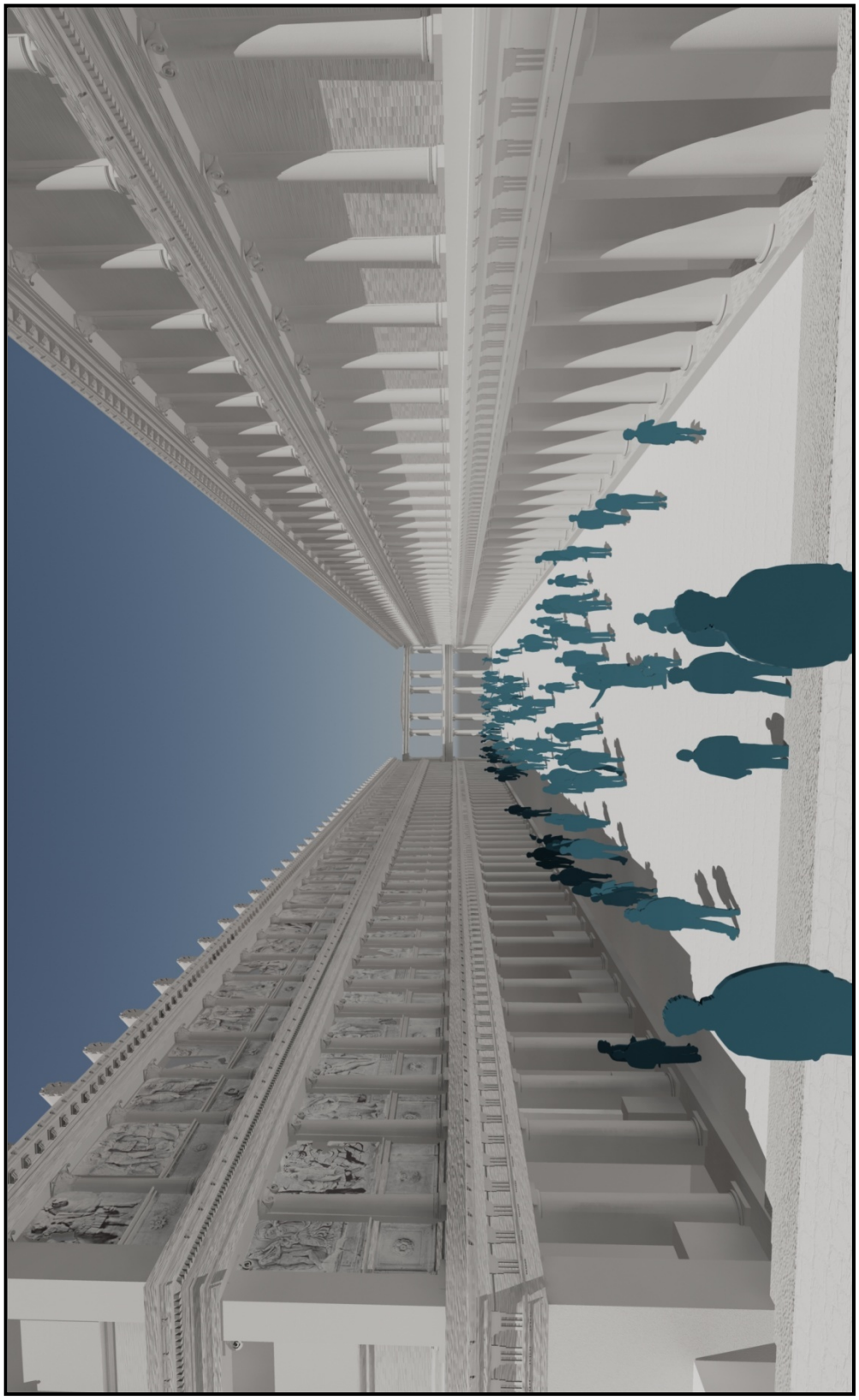


Figure 43 - Perspective view from the model of the Sebasteion

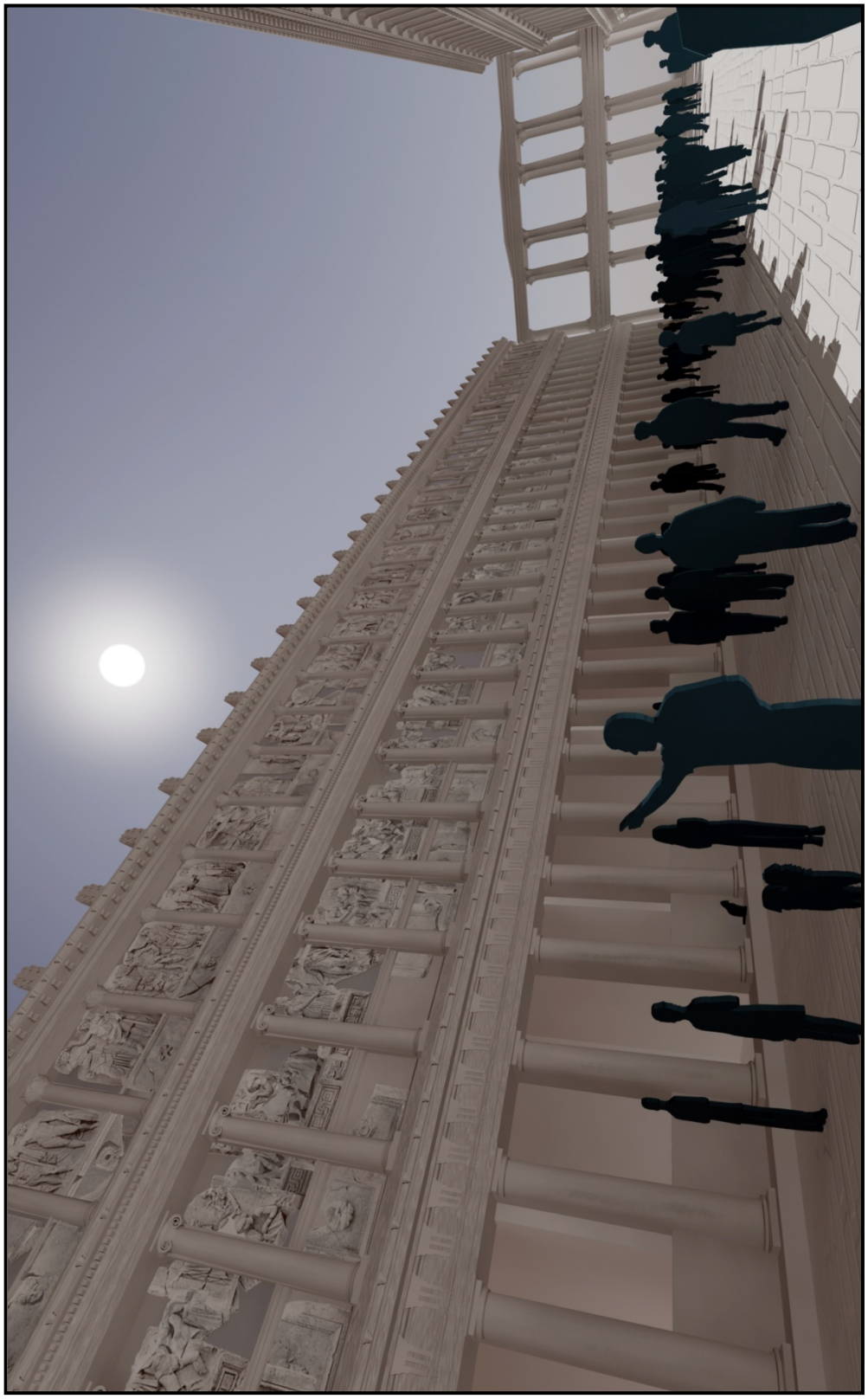


Figure 44 - Perspective view from the model of the Sebasteion

Figure 45 - Perspective view from the model of the Sebasteion

Figure 46 - Perspective view from the model of the Sebasteion

Figure 47 - Perspective view from the model of the Sebasteion during sunset

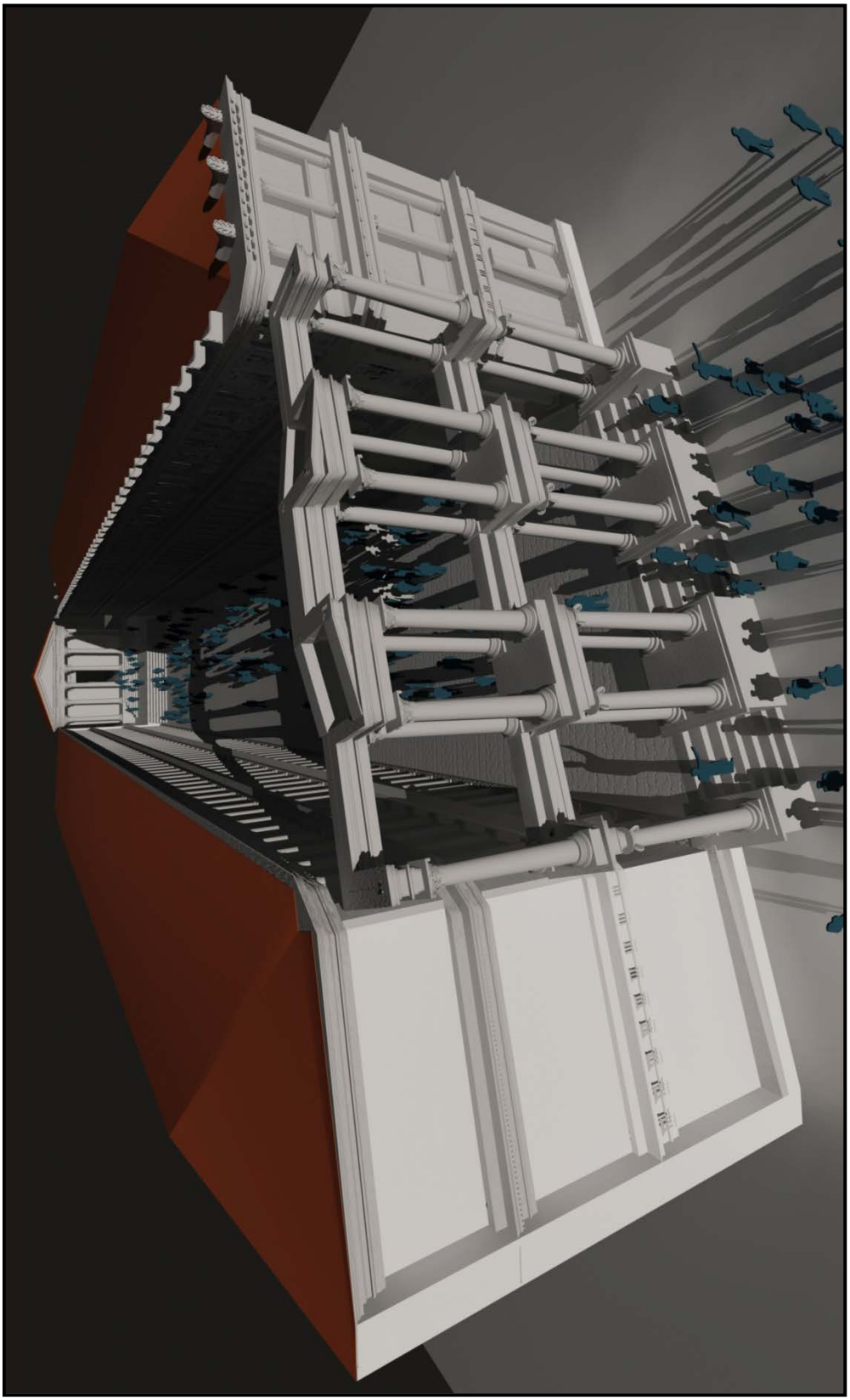


Figure 48 - Perspective view from the model of the Sebasteion during sunset

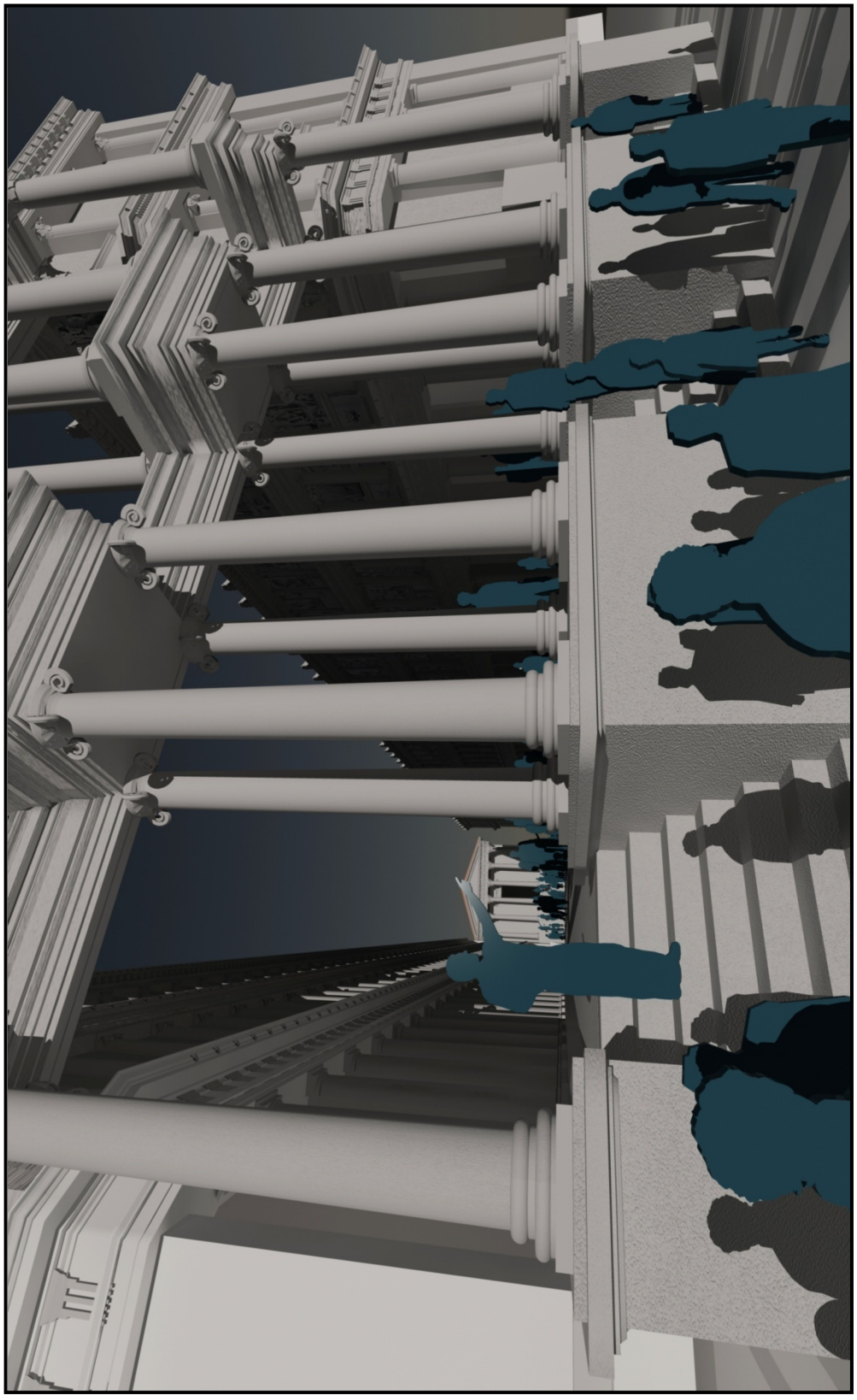


Figure 49 - Perspective view from the model of the Sebasteion during sunset

Figure 50 - Perspective view from the model of the Sebasteion during sunset

Figure 51 - Perspective view from the model of the Sebasteion during sunset

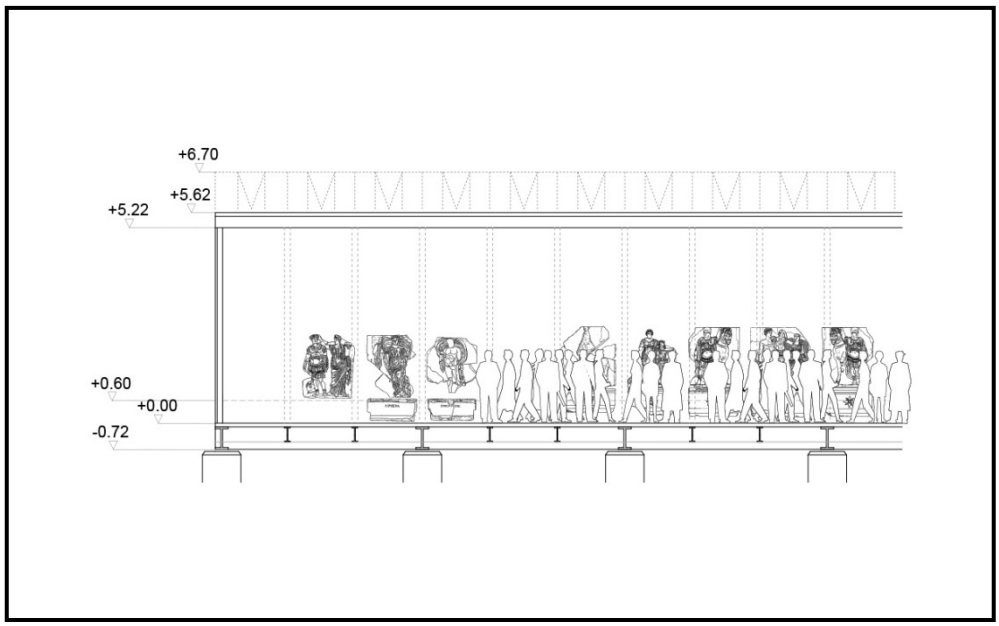


Figure 52 - Section of the New Museum Wing with visitors and the reliefs

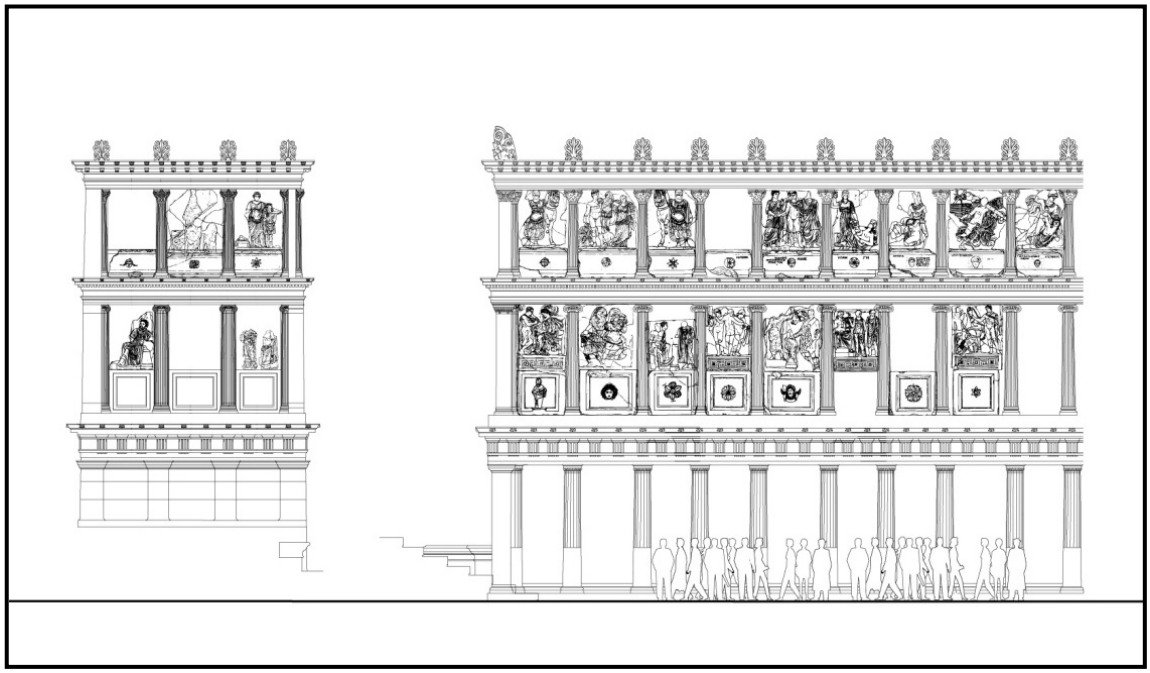


Figure 53 - The Sebasteion of Aphrodisias SE Corner restitution drawing

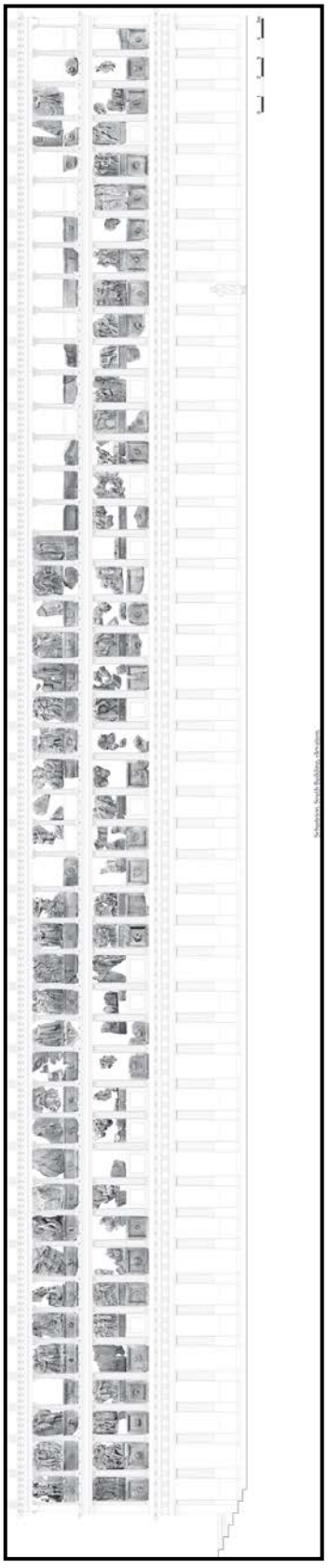


Figure 54 - Elevation of the South Portico of the Sebasteion

Figure 55 - Exterior render from Zaha Hadid's Regium Waterfront project. Source: David K.,. (2009, March 15). *Regium Waterfront Zaha Hadid Architects*. Retrieved January 15, 2011, from Plus Mood: http://plusmood.com/2009/03/regium-waterfront-zaha-hadid-architects/

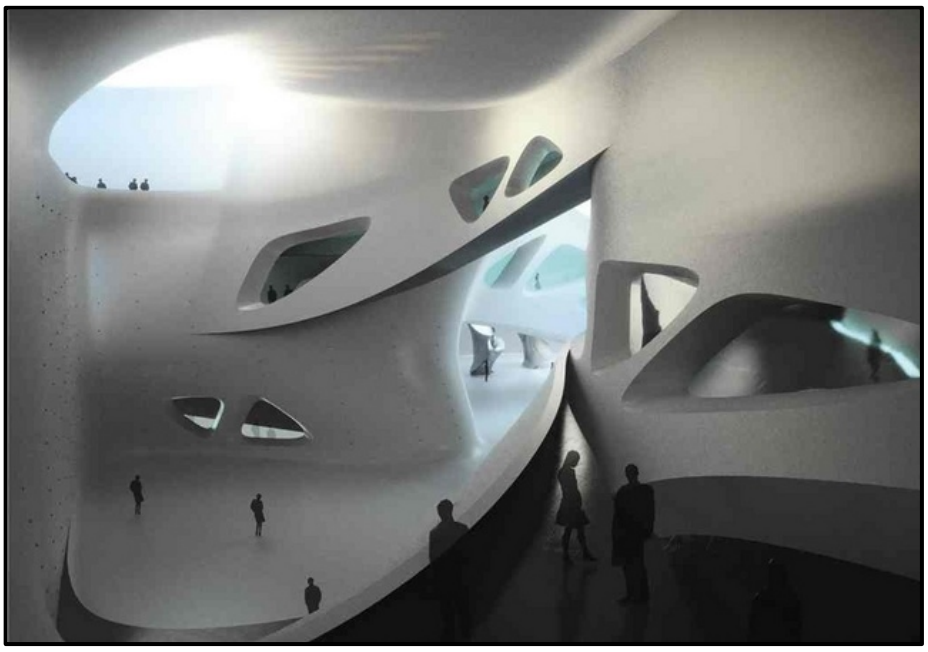


Figure 56 - Interior render from Zaha Hadid's Regium Waterfront. Source: David K.,. (2009, March 15). *Regium Waterfront Zaha Hadid Architects*. Retrieved January 15, 2011, from Plus Mood: http://plusmood.com/2009/03/regium-waterfront-zaha-hadid-architects/

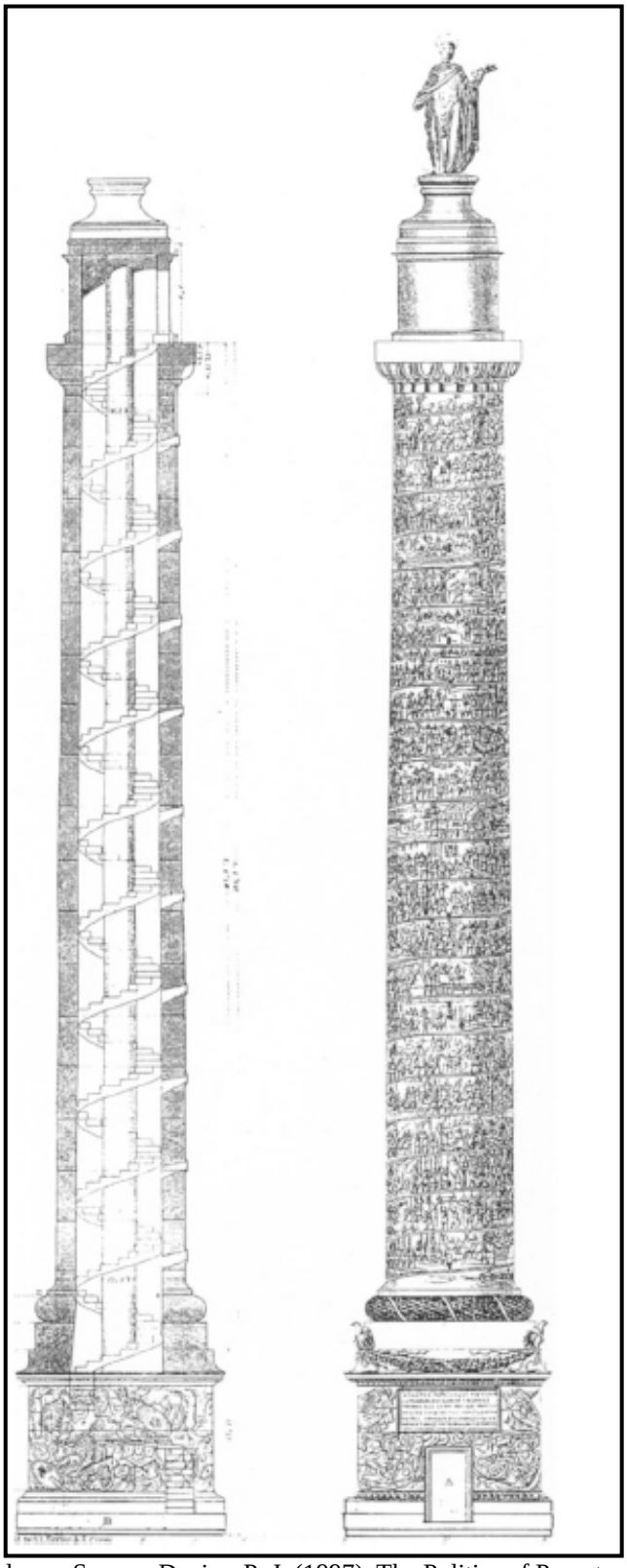


Figure 57 - Trajan's Column. Source: Davies, P. J. (1997). The Politics of Perpetuation: Trajan's Column and the Art of Commemoration. *Journal of Roman Archaeology , 101* (1), pp.43

Figure 58 - View from the Cast Courts of the Victoria and Albert Museum. Source: Nein09, Replica of Trajan's Column August 12 2008 via Flickr, Creative Commons Attribution.

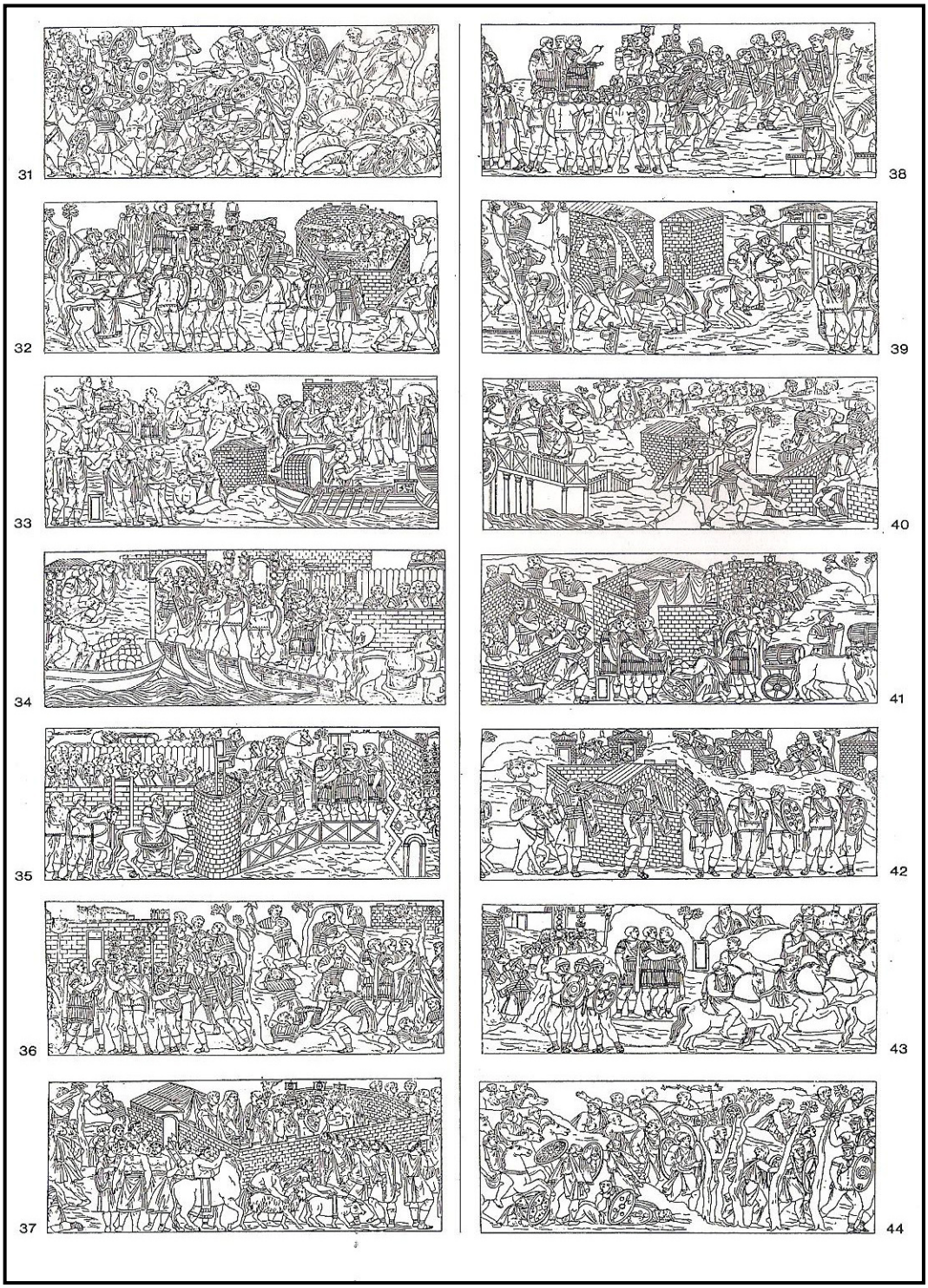


Figure 59 - Drawings of Trajan's Column sections based on the exhibition at the Museum of Roman Civilization in Rome. Source: Coarelli, D. F. (1974). *Guida archelogica di Roma.* Rome: Arnoldo Mondadori Editore.

Figure 60 - The Tetrapylon of Aphrodisias from the tourist pathway (author)

Figure 61 - View of the Street in front of the Tetrapylon (author)

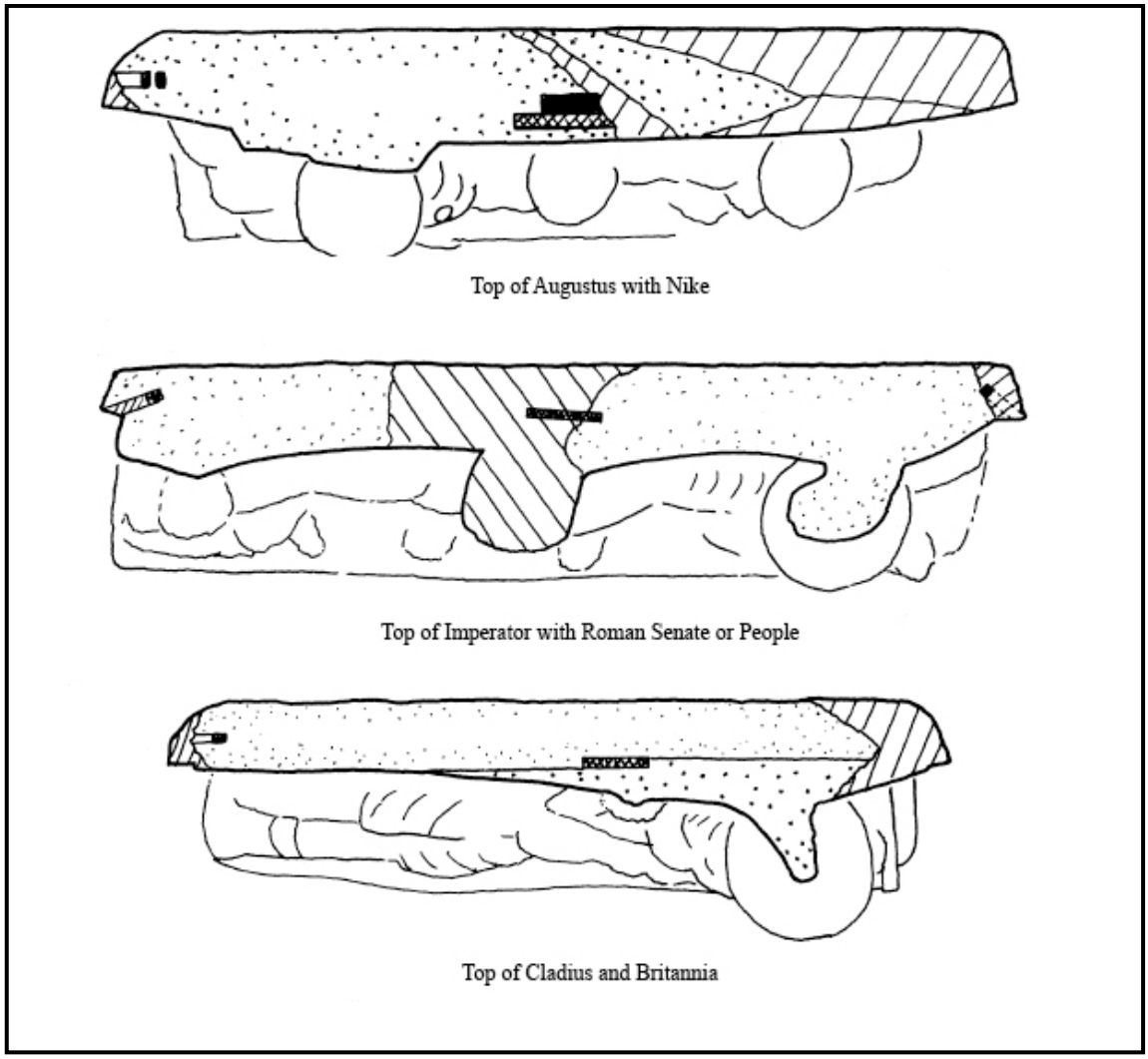


Figure 62 - Top views of reliefs. Source: Smith, R. (1987). The Imperial Reliefs from the Sebasteion at Aphrodisias. *The Journal of Roman Studies , pp.101,113 and 115*

B. PLATES

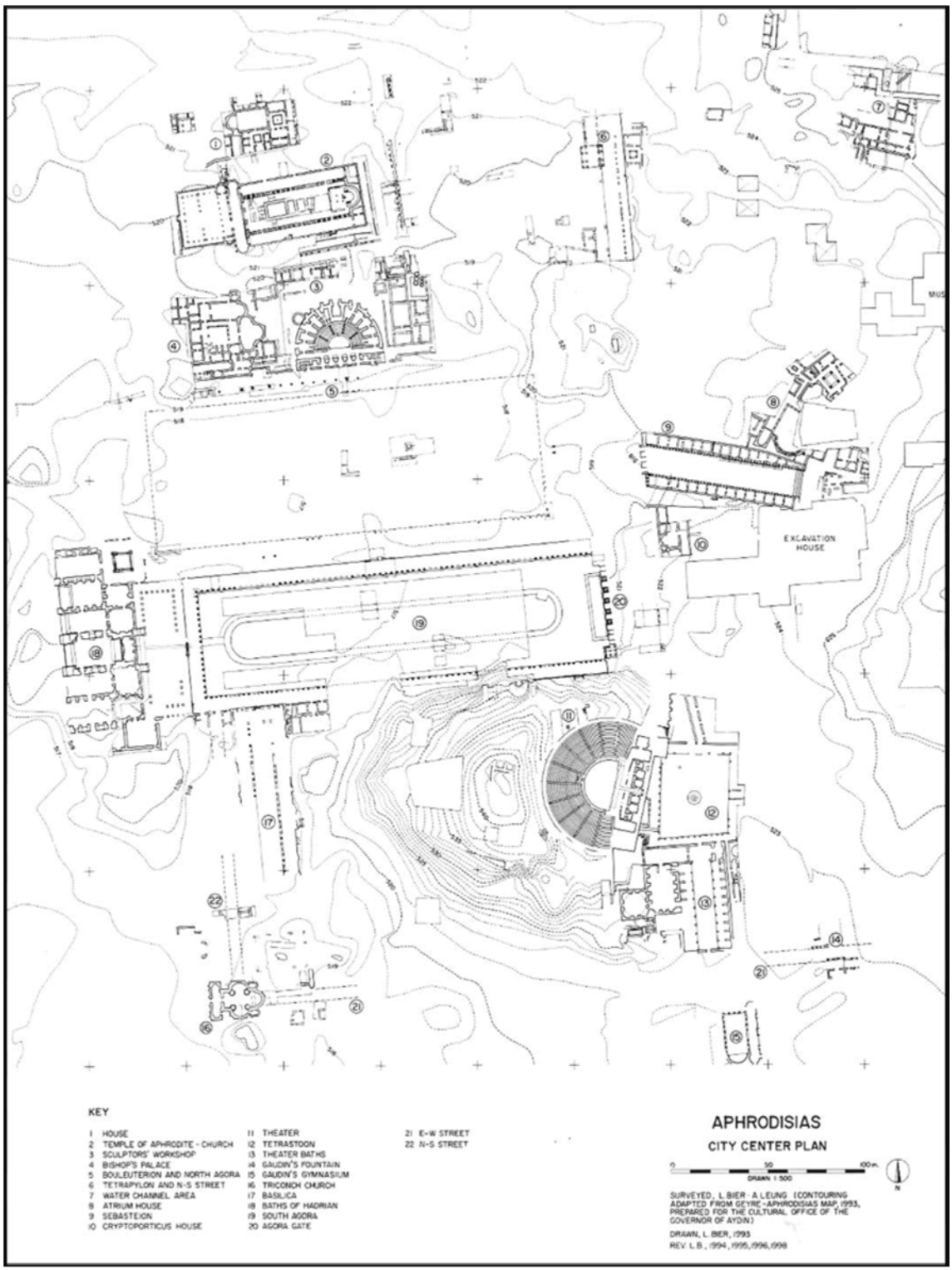


Plate 1 - Aphrodisias City Centre. Source: Ratté, C. (2001). New Research on the Urban Development of Aphrodisias in the Late Antiquity. (D. Parrish, Ed.) *Journal of Roman Archaeology Supplementary Series* (45), pp.120.

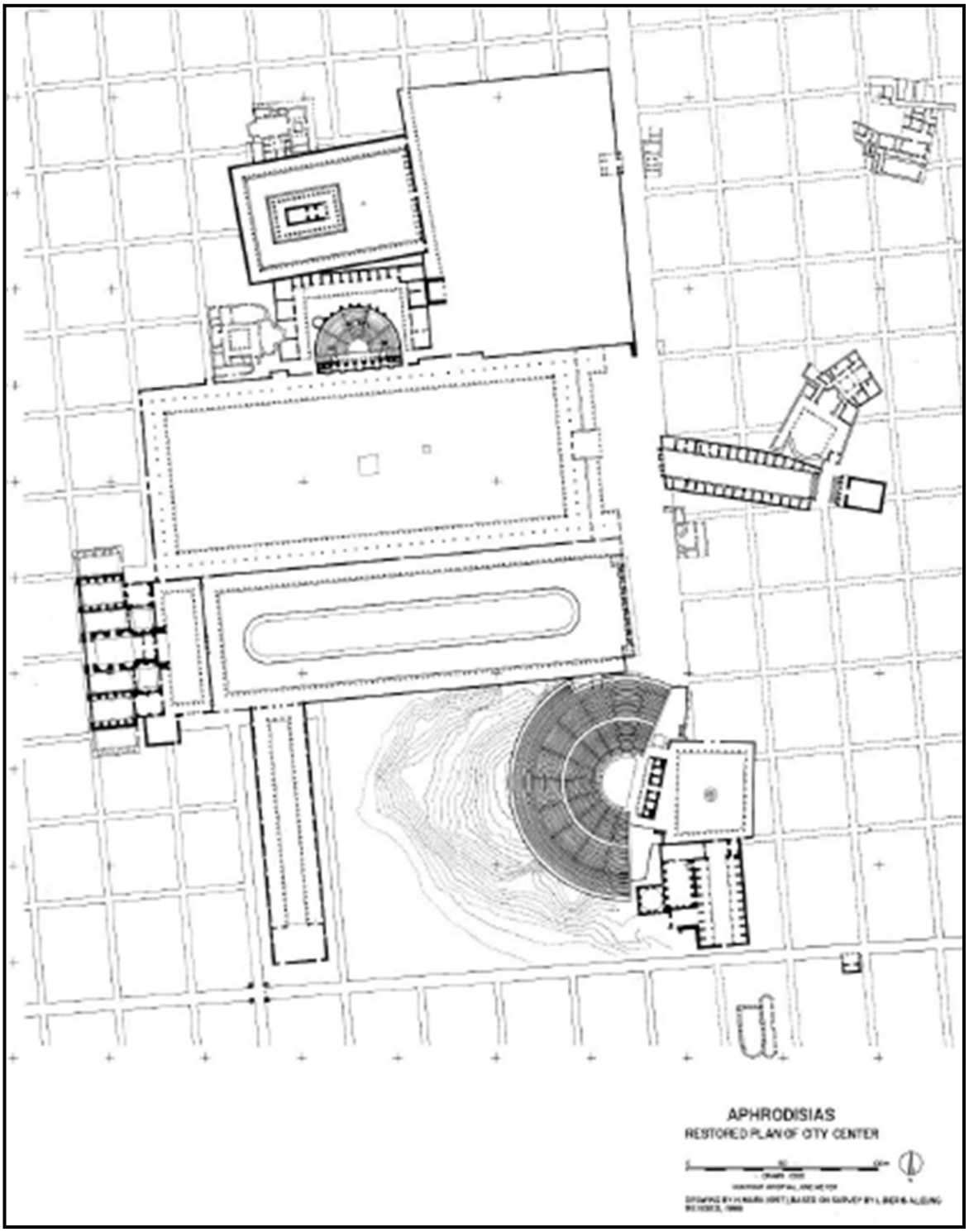


Plate 2 - Aphrodisias City Center. Source: Ratté, C. (2001). New Research on the Urban Development of Aphrodisias in the Late Antiquity. (D. Parrish, Ed.) *Journal of Roman Archaeology Supplementary Series* (45), pp. 122.

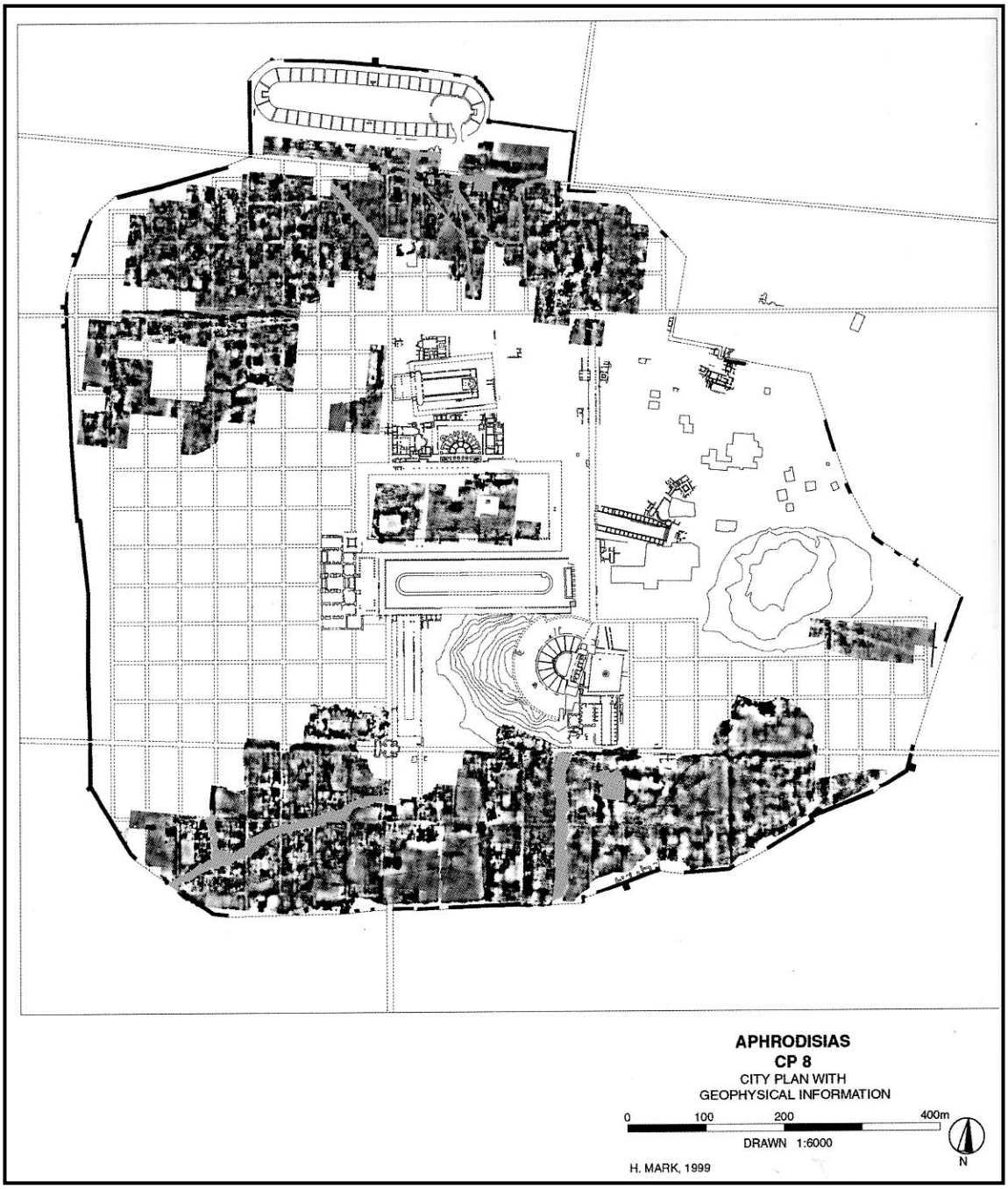


Plate 3 - City plan of Aphrodisias with geophysical information. Source: Ratté, C. (2001). New Research on the Urban Development of Aphrodisias in the Late Antiquity. (D. Parrish, Ed.) *Journal of Roman Archaeology Supplementary Series* (45), pp.118.

Plate 4 - Monoscopic photograph of Aphrodisias 1955 (Image is courtesy of Harita Genel Komutanlığı – General Command of Mapping - Ankara)

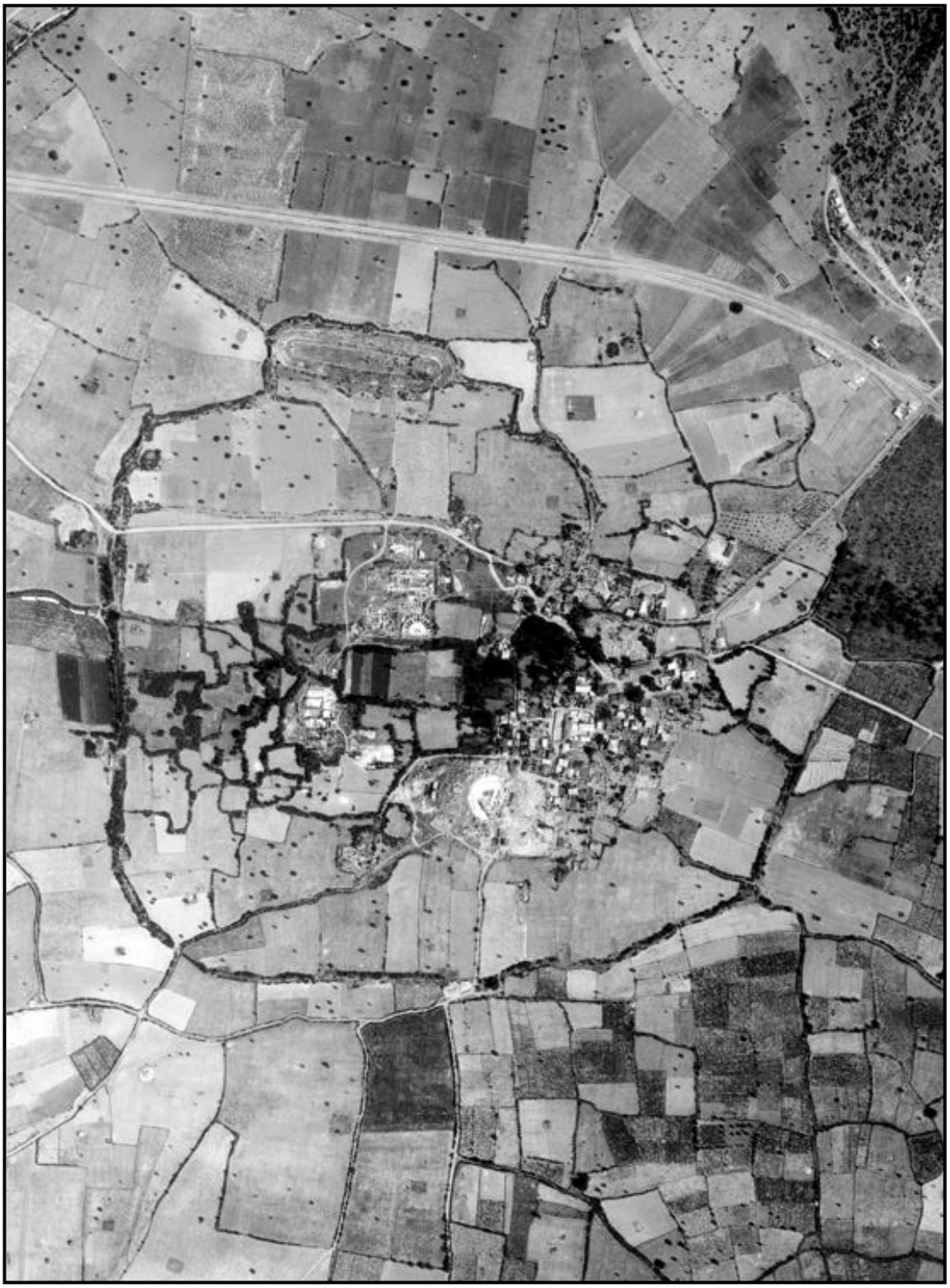


Plate 5 - Monoscopic photograph of Aphrodisias 1972 (Image is courtesy of Harita Genel Komutanlığı – General Command of Mapping - Ankara)

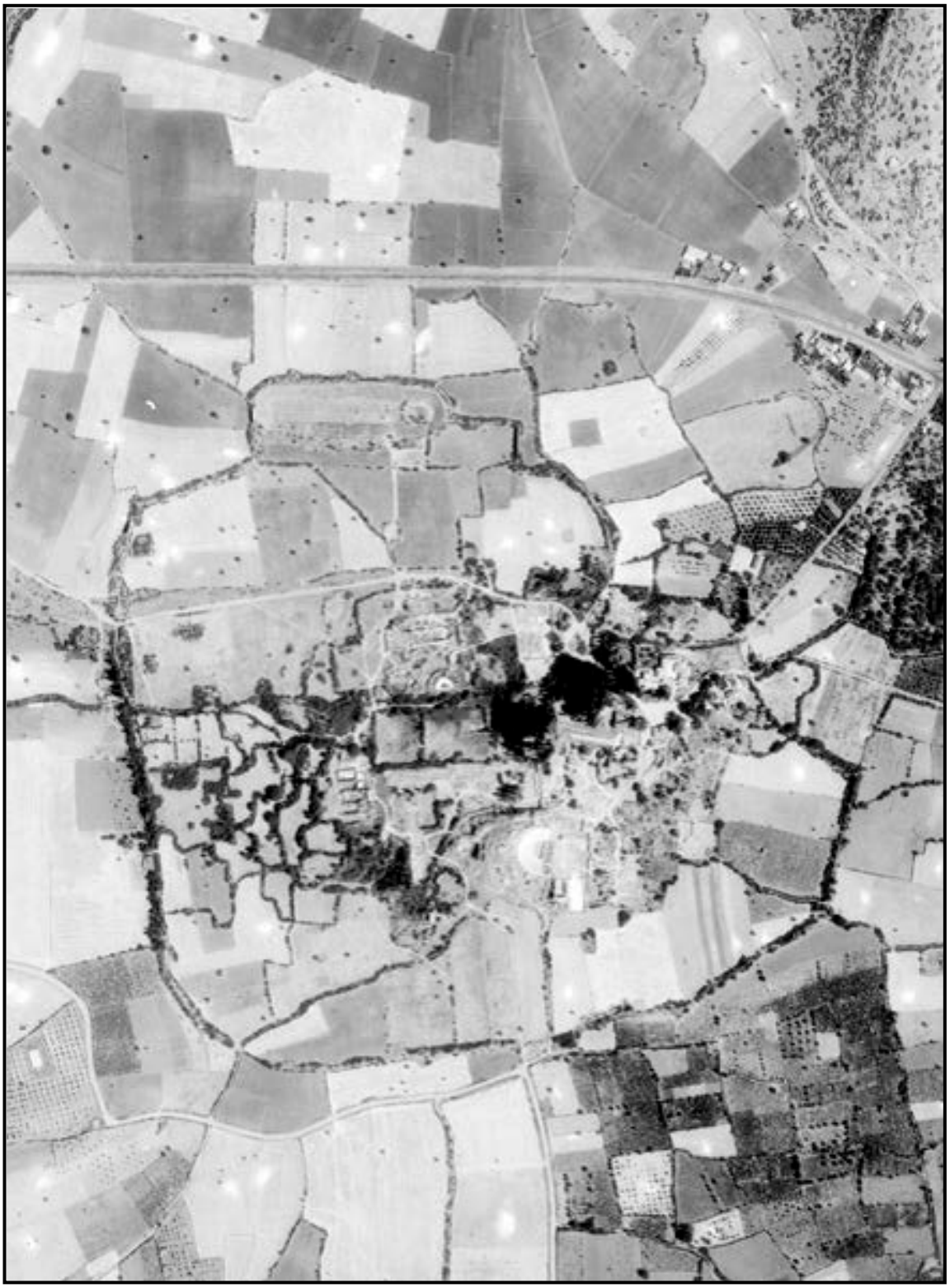


Plate 6 - Monoscopic photograph of Aphrodisias 1988 (Image is courtesy of Harita Genel Komutanlığı – General Command of Mapping - Ankara)

Plate 7 - Monoscopic photograph of Aphrodisias 1993 (Image is courtesy of Harita Genel Komutanlığı – General Command of Mapping - Ankara)