THEORY AND PRACTICE: SOCIO-POLITICAL AND PHILOSOPHICAL DYNAMICS IN THE EVOLUTION OF THE GRID-PLAN IN ANCIENT GREEK CITIES

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Approval of the Graduate School of Social Sciences

_____
Prof. Dr. Sencer AYATA
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Arts.

_____
Assoc. Prof. Dr. Güven A. SARGIN
Head of Department

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Arts.

_____
Prof. Dr. Suna GÜVEN
Supervisor

Examining Committee Members

Dr. Namık ERKAL (METU, AH) _____

Prof. Dr. Suna GÜVEN (METU, AH) _____

Dr. Jacques MORIN (BILKENT, HART) _____

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name: Özgür Emre IŞIK

Signature:

ABSTRACT

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IŞIK, Özgür Emre
M. A., History of Architecture
Supervisor: Prof. Dr. Suna GÜVEN
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Social, political and philosophical dynamics which supposedly played an important role in the formation of the grid-plan in ancient Greek cities are explored in this thesis. In this respect, the thesis aims to expose the socio-political and philosophical matrix of Greek society in which the grid was implemented with an emphasis on the concepts of "equality," "rationality" and "geometric harmony." Having formulated a theoretical framework, it concentrates on several cases from different regions and contexts in the Mediterranean in order to confirm this framework. The thesis investigates the nature of the Greek grid-plan within three main parts; first the grid-plans of non-Greek cultures with which ancient Greeks had close contacts; second the relationship between the grid-plan and political power in Greek *poleis* with special attention to the formation of 'egalitarian' ideals in society; third the physical expressions of the philosophical concepts of "perfection," "mathematical regularity" and "geometrical equality" in the *cosmos* on urban pattern.

Keywords: Urban planning in antiquity, the grid-plan, Greek *polis*, urban/social space, early Greek philosophy.

ÖZ

KURAM VE PRATİK: ANTİK YUNAN KENTLERİNDE IZGARA-PLAN GELİŞİMİNİN SOSYO-POLİTİK VE FELSEFİ DİNAMİKLERİ

IŞIK, Özgür Emre
Yüksek Lisans, Mimarlık Tarihi
Tez Yöneticisi: Prof. Dr. Suna GÜVEN
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Bu tezde, antik Yunan kentlerindeki ızgara-planlamasının oluşumunda önemli rol oynayan sosyal, politik ve felsefi dinamikler incelenmektedir. Bu itibarla, tez, "eşitlik," "rasyonellik" ve "geometrik uyum" gibi kavramlara vurgu yaparak ızgara-planını uygulayan Yunan toplumunun sosyo-politik ve felsefi yapısını açığa çıkarmayı hedeflemiştir. Tez, kuramsal bir çerçeve oluşturduktan sonra, bu çerçeveyi sınamak için Akdeniz çevresinde farklı bölgelerden ve bağlamlardan birkaç örnek üzerinde yoğunlaşmaktadır. Tez, Yunan ızgara-planının doğasını üç ana kısımda inceler; ilk kısımda Yunanlıların yakın ilişkiler kurduğu fakat Yunanlı olmayan kültürlerin ürettiği ızgara-planı; ikinci kısımda toplumdaki 'eşitlikçi' ideallerin oluşumunun üzerinde durularak ızgara-plan ile Yunan kent-devletlerindeki politik güç arasındaki ilişkiler; ve üçüncü kısımda evrendeki "mükemmeliyet," "matematiksel düzen" ve "geometrik eşitlik" gibi felsefi kavramların kent planlaması üzerindeki fiziksel yansımaları tartışılır.

Anahtar Kelimeler: Antik dönemde kent planlama, ızgara-plan, Yunan kent-devletleri, kentsel/sosyal mekan, erken Yunan felsefesi.

To my dear parents,

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INTRODUCTION

For the ancients, in opposition to 'barbarism' and 'chaos', city was the center of civilization. The concept of city still occupies a key position in understanding the history of civilization. In this regard, many scholars have intensively investigated the origins of the ancient city. In the light of recent archaeological discoveries, they have contemplated questions like "when, where and how did the 'first' city in history emerge?" Yet, in answering such queries, it is impossible to separate the ancient society from its built environment. As an interesting ancient testimony, the Athenian general Nicias clearly endorses this view too. In his speech addressing those who returned from an unsuccessful military expedition to Syracuse after some sixty years, he asserted that a city is not formed by silent walls and empty ships but by the people in it.[1] So, it may be considered futile to study solely the society or the material environment without their active agents. Therefore, cultural, political, socio-economical and even philosophical dynamics of society must be taken into consideration while investigating the development of the ancient city before the Industrial Revolution.

Although many scholars have made invaluable attempts relating ancient social dynamics and urban patterns, their interpretations are often surprisingly over-simplified and insufficient. For example, Kriesis (1965, 41-61) suggests that in ancient Greece irregular urban pattern was imposed on under-populated areas where people lived as peasants in rural environs with loose human relationship based on kinship while regular pattern was imposed on over-populated areas with a more complex structure of society. More strikingly, despite the fact that every scholar investigating Greek town planning inevitably mentions the grid pattern, some blindly maintain that the grid (or gridiron) is the simplest pattern and quickest way to lay out a city which implies that no innovative intellectual theory or 'great

[1] Thucydides 7.77.

genius' is required. For instance, one of the simplest definitions of the grid-plan is brought forward by Kostof (1991, 103) as "the grid-plan consists of a series of narrow and straight streets, cutting one another at right angles forming a grid. It has horizontal and vertical coordinates in orthogonal relationship… Since the grid is an order of straight lines and right angles, it apparently makes use of the means of geometry." He continues by stating that "geometry, from the Greek word *geometria,* literally means 'earth measurement.' So the grid applies to country and town, to fields and streets, and at its most basic it divides an undifferentiated stretch of land into regular, measured plots."[2]

Although such formal definitions may seem obvious, they are not sufficient to fully understand the grid pattern with its all cultural implications in ancient Greek cities. The grid obviously had more sophisticated intellectual concerns beyond its technical and practical application on the site. That is to say, it involved more than the purely 'rational' and empirical practice of land surveyors and town planners. Thus, the primary aim of this thesis is to investigate the dual influences of the political constitution of the state (*polis*) and the philosophical conception of the universe (*cosmos*) on the evolution of the grid-plan in ancient Greek cities.

In this thesis, in order to avoid some misinterpretations arisinf from modern translators, the evidence of ancient sources such as Homeros, Hesiodos, Herodotos, Thucydides, Plato, Aristotle, Pausanias, Strabo, Vitruvius and several other ancient writers and philosophers are used and directly quoted as much as possible to expose the political and philosophical matrix of the Greek society in which the grid-plan was implemented. Ancient names are painstakingly written in their original Greek or Latin spellings (with English letters) instead of their English transliteration (e.g. Anaximandros instead of Anaximander). Nevertheless, some names such as Aristotle and Livy are used in their English transliteration since their original spellings may be sometimes conventionally awkward.

It should be stated that archaeological and textual evidence is absolutely indispensable for a project of this nature. In this respect, the main approach of the thesis is to first formulate a theoretical framework through ancient literary evidence,

[2] Actually, although Spiro Kostof briliantly proposed a network of interrelations between politics and the grid-pattern in his book *The City Shaped: Urban Patterns And Meanings Through History*, he tends to see the grid primarily as a pragmatic tool.

and after this, to ask questions about the theory followed by confirming it through a case. However, the thesis does not focus on one major case study. Instead of having a single case study, there are several case studies from different regions and in different contexts in order to be able to deal with what might be considered a rather 'global' phenomenon (Fig. 1). The cases are selected according to their degree of correlation to the theoretical framework of the thesis, and the amount of published research and original ancient sources available. Yet, they do not follow a strict chronological sequence. It should be also noted that they are not prototypes. It is still possible to increase the number of cases.

The grid-plan, as it seems, has long been practiced by various civilizations and in various times in almost the entire geography of the world. Nevertheless, the Mediterranean seems to be the earliest center of origin for this urban pattern. For example, the earliest workers' villages of the Old Kingdom at places like Giza (2570 B.C. –2500 B.C.) housing a rotating labor force were laid out in blocks of long galleries separated by straight streets forming a grid in order to organize a 'homogeneous' population with a single social purpose. In this regard, according to Castagnoli (1971, 5), the Greek grid-plan originated from the examples of the 'East,' namely Egypt and Mesopotamia in particular. Although patterns of urban planning tend to be conservative, if we are to seek the origins of the ancient Greek grid-plan, it is reasonable to first investigate the grid in the 'East.' Hence, the first chapter of the thesis begins with a brief survey of the architectural tools and meaning of the grid in the 'East.' The first part of this chapter focuses on cases in Egypt. The main cases of this part are the pyramid workers' town at Kahun in the Middle Kingdom and Akhenaten's new capital Amarna in the New Kingdom as they reveal clear evidence of the Egyptian grid-plan in different social and political contexts. On the other hand, the second part focuses on cases in Mesopotamia. The city of Babylon is investigated as a case study in this section. Since we do not possess much literary evidence, concrete archaeological discoveries are the primary source to reveal the nature of the 'eastern' regularly planned cities. However, this does not mean the chapter fails to discuss some basic spiritual inspirations which instigated the implementation of the grid pattern. For example, it is demonstrated that while the sun and the Nile provided the basis of the Egyptian 'cosmic' order

designating the geometrical orientation of cities, astronomical observations paved the way for the 'celestial' orientation of Mesopotamian architecture. In brief, the main goal here is to understand the nature of the pre-Greek grid pattern in its cultural context through the survey of some crucial cases in the 'East.'[3]

The first chapter then continues with the non-Greek examples of the grid-plan in the 'West.' Etruscan civilization which reveals an important phase of the grid-plan throughout its history was in close contact with the Greeks in Italy. Thus, Etruria is the focus of this part. Some scholars claim that, like the Greek ones, the 'eastern' urban patterns deeply influenced the Etruscan examples, too. However, the Etruscan grid with a strict system of axes considerably differs from the Greek grid. In this part particularly the Etruscan colony of Marzabotto is discussed in some detail as it provides one of the most illuminating Etruscan examples of the grid-plan.

In the first chapter, therefore, the architectural properties of the non-Greek grid-plans of the 'East' and 'West' in their cultural contexts are explored with a discussion of how they could have inspired the Greek regular town planning. To avoid "orientalist' trends of cultural evaluation, the terms 'East' and 'West' are used with quotation marks. Actually, other than geographical indications, they meant nothing culturally. Moreover, it is difficult to decide to what extent a civilization is 'Eastern' or 'Western' since many cultural (as well as material) elements were borrowed between each other. Nonetheless, it has become conventional to use the labels of 'East' or 'West.'

After giving a general outline of the non-Greek grid in the Mediterranean, the thesis concentrates on questions of the origins and implications of the Greek grid-plan. It tries to find answers to these questions in terms of the political and philosophical dynamics of ancient Greek society.

First of all, it should be stated that the evolution of the grid-plan simultaneously and interdependently took place with the development of the *polis*.

[3] In addition to early Egyptian and Mesopotamian examples, it is also possible to find the pre-Hellenic grid pattern in Anatolia. In this respect, Zernaki Tepe reveals an early example of the grid-plan in eastern Anatolia. The Urartian city of Zernaki Tepe was located on a rocky hill not far from the northern shores of Lake Van. In both the citadel and the lower town of this city, the streets were laid out on a regular grid-plan with intersecting orthogonal axes (Fig 24). For further information see Veli Sevin. 1997. "Van Zernaki Tepe: On the Urartian Grid-plan" in *Anatolica*, vol. 23, pp. 173-177.

In ancient Greek language, the term *polis* meant both the state and the urban center of that state (i.e. city-state), but more importantly it meant the community as a whole. Therefore, in understanding the Greek society and its architectural production, it is indispensable to fully understand the structure of the *polis*. Naturally, the Greek *polis* did not emerge in one day. The roots of the *polis* formation as well as those of urbanization in ancient Greek cities, must be sought in earlier periods, namely the Archaic Age, the Early Iron Age (so-called the "Dark Age") and the Bronze Age.

For many scholars, the earlier civilization of Minoans and Mycenaeans in the Bronze Age were ancestors of the Greeks (Fig. 29). Judging by the considerable amount of inherited cultural and material elements from the Bronze Age, this could be correct. For example, in terms of architecture, the Minoan palace organization in Knossos with public spaces, meeting and ceremonial halls arranged around a central huge courtyard seems to have inspired the development of the Greek *agora* with public buildings around it (Fig. 30).[4] Moreover, albeit in a totally different context, the Mycenaean *megaron* plan type was transferred to Greek temple (Fig. 31). Most interestingly, it is suggested that in the 11th century B.C. 'Ionians' carried with them whatever was left from the Bronze Age and founded the 'remarkable' Ionian civilization in Asia Minor. However, the political constitution of the Greek *polis* was entirely different from that of the Minoan and Mycenaean cities. Nevertheless, it is not reasonable to think that *polis* structure developed totally independently from the earlier political experiences. Thus, the second chapter begins with a brief discussion on the concept of *polis* and continues with a more comprehensive investigation of the history of its formation.

The second chapter also aims to convey how Greeks came to develop the abstract concept of *isonomia*, or equality before law, pertaining to the political structure of *polis*. Cahill (2002, 1) states that the distribution of land was crucial as a mechanism for achieving unity and order of the *polis*. In this regard, such abstract ideas like *isonomia* could have had their physical expressions on cities. In questioning the interrelations between the concept of *isonomia* and city planning,

[4] Indeed, we do not possess convincing evidence to suggest that the Greeks actually witnessed this sort of arrangement. Nevertheless, it is possible to suggest that the idea could have continued from the Bronze Age.

Olynthos is selected as the most thematic case since it displays an 'egalitarian' distribution of housing plots among citizens.

Colonization between the 8th and the 6th centuries B.C. was an important phase in the formation of Greek identity. In addition, continuous founding and refounding of cities gave way to developing theories about the 'ideal' city. Indeed, planned cities in ancient Greece were usually colonies imposed on the land at a single stroke. In this sense, at their inception they were artificial. They did not come about through the normal growth of an existing settlement pattern and were therefore not bound by environmental pressures of prior occupancy and use. So, the new settlers had the opportunity to realize their 'ideals' by imposing them on the chosen site. The second chapter ends with an investigation into the political and economical (as well as spiritual) motivations and resulting consequences of colonization. The case of this part is the colonial city of Megara Hyblaea since it partly indicates how the Greeks carried an 'eastern' urban pattern further to the 'west.'

According to Waterhouse (1993, 100), "ancient architecture, the founding and layout of cities, had much to do with reason." He also states that "reconciliation by articulating and dissolving the boundaries of the landscape became a primary purpose of architecture and city planning." It can be claimed that nature occupied the central position in every kind of architectural production of Greek society. Indeed, ancient Greeks showed great reverence to nature and sought harmony between nature and human community. Thus, the study of ancient philosophy based on the observation of nature, which had both spiritual and secular qualities, may reveal the ancient Greeks' most authentic conceptions of the *cosmos*. However, it should be noted that it was usually not the 'ordinary' 'humble' man in ancient society who dealt with the essence of the universe. Actually, he might even consider such preoccupations as 'impious.' On the other hand, it is likely that philosophical doctrines deeply influenced the intellectual fields. Thus, the third and the last chapter of this thesis focuses on two main pre-Socratic philosophical schools namely the Ionian and Pythagorean School. The aim is to understand the basic principles of these schools concerning the structure of the *cosmos* which allegedly affected the urban planning theories in ancient Greece. Metapontum where

Pythagoras spent his last days is also selected as a case study to see direct Pythagorean influences on building activity and urban space.

It is commonly accepted that like many influential Greek philosophers, the birthplace of the Greek grid-plan was Ionia. However, it would be more appropriate to state that the theory of Greek urban planning was formulated in Ionia. In this respect, architectural principles of two prominent Ionian town planners namely Hippodamos and Pytheos who are usually associated with the Pythagorean School are discussed in detail. The question raised in this chapter is how and to what extent philosophical conceptions could have influenced the architectural production of these town planners. The main cases of the chapter naturally Miletos, the hometown of Hippodamos, and Priene designed supposedly by Pytheos revealing rather interesting features of the Greek grid-plan.

Lastly, it should be stressed that there are various discussions on this topic brought forward by several scholars. The thesis aims to put them together in a critical and clear way as much as it can in order to draw a more convincing conclusion.

CHAPTER 2

NON-GREEK GRIDS IN THE MEDITERRANEAN WORLD

2.1. The Grid in the "East"

2.1.1. The Grid in Egypt: Kahun and Amarna

It is true that to some degree every civilization reflects the influence of its physical environment. Egypt, in this respect, is a country where the landscape played a crucial role, perhaps more than most, in shaping the cultural development of its inhabitants. In other words, the Egyptian culture was mainly predestined by its unique geographic and climatic conditions (Fig. 2). The natural forces and their cycles provided a rather dramatic setting for any kind of human activity. In antiquity, there were two great life-giving forces, namely the Nile and the sun. In their religious beliefs, too, Egyptians recognized these forces as the causes of the existence of other natural elements which shaped their world.[5]

Herodotos aptly called Egypt a "gift of the Nile" for without the Nile, Egypt would have been a desert like its surrounding lands. A country with eternally sunny skies and therefore scanty and irregular rainfall would never have supported crops and animals. The continued existence of the fertile areas in Egypt has always been due to the natural phenomenon of the regular inundation of the Nile. The annual inundation of the river caused by the melting of snow and heavy spring rains in the Abyssinian highlands was predictable and reliable. It was this annual inundation of the Nile which brought life to Egypt enabling the Egyptians to develop their remarkable civilization.

The other most important natural life-giving force was of course the sun. The Egyptians acknowledged the sun as the creative force and sustainer of life. They worshipped it under several names as a god.

[5] The solar god, Re, the Nile god, Hapy, and the god of vegetation and rebirth, Osiris were probably the most prominent and creative gods in the Egyptian pantheon.

These two creative forces of the sun and the Nile seem to have much in common. They both expressed, in their natural cycles, patterns of life, death, and rebirth. In this respect, the sun rises every morning and sets in the evening to reappear unfailingly in the horizon. The Nile, similarly, annually gives its 'gift' of water. In this way, the life, death and rebirth of nature was vividly experienced by the Egyptians. It has been suggested by many scholars that this regular environmental pattern influenced the Egyptian consciousness so profoundly that they attempted to transfer the concept of regular natural cycles (and the concept of eternity) to the human experience (David 1986, 18).

Therefore, it is not surprising that balance and moderation were among the concepts that Egyptians valued most. Furthermore, we may assume that the rhythm and regularity of the Nile and the sun provided the Egyptians with the idea of 'cosmic' order of which the ultimate expressions can be found in the monumental art and architecture of ancient Egypt. In the articulation of this 'cosmic' order, symmetry and rigid geometry seem to have been commonly practiced in architectural production. Available archaeological evidence of the preserved monumental ruins of mortuary and sacred buildings helps us to reveal the principles of ancient Egyptian architecture. For example, a complete mastery of systematic design was already accomplished around 2700 B.C. in Imhotep's funerary complex for Djoser at Saqqara (Fig. 3). This complex demonstrates planning on the grandest scale. In articulating the building elements, and in achieving the balance and symmetry of solids and voids, the architect deliberately made use of sophisticated straight and broken axes (Fig. 4). According to Lampl (1968, 29), the principles of design and planning established at Saqqara for monumental tomb complexes remained unchanged during the rest of ancient Egyptian architectural history. Thus, although the building programs and styles might vary, the philosophy of planning is the same. There is always a consistent admiration for axial balance and symmetry in the Egyptian architecture.

In addition to mortuary and sacred complexes, the irrigation system also followed an axial (or an orthogonal) layout (David 1986, 17). From the earliest times, the Egyptian irrigation system evolved a pattern where the land was divided into plots, each being enclosed by strong earth banks. These banks were arranged

on a grid system, with long banks running parallel to the river and another series running across them. This arrangement seems to have been responsible for the earliest organization of the country. Maintaining the irrigation system also paved the way for the strong centralized state.

There can be no doubt that early cities existed in ancient Egypt. However, the character of Egyptian cities varies according to their period. For example, before the unified monarchy and during the breakdown of the central power, the city appears to be an autonomous organism, generally ruled by a local lord. On the contrary, in times of strong central government, the cities had no special rights or jurisdiction and became mere administrative or cult centers (Lampl 1968, 24). In fact, no communal enterprise was undertaken in these cities which hindered the formation of a strong autonomous civic organization. Under the absolute central authority, there was no room left for the development of independent city-states.

As stated earlier, much of our knowledge of ancient Egyptian architecture is derived from tombs and temples (Fig. 5). These sites which were built of stone to last for eternity are well-preserved and have received much attention (Figs. 6 and 7). However, the cities were built of mud-brick and have therefore survived less. Nevertheless, the cities have equal importance in providing a more complete interpretation of the Egyptian planning and design approaches.

Some archaeologists posit that true urban development never existed on a widespread scale in Egypt. Although the remains of most Egyptian cities are too sparse and isolated to allow satisfactory judgments about their planning, we may still draw some conclusions from the small number of partially preserved Egyptian cities.

It has been suggested that two main types of urban development occurred in ancient Egypt. One was the natural, unplanned settlements which evolved from the conditions of the pre-dynastic period. The second was the planned settlements which were founded for specific reasons in particular areas. For instance, the so-called ‘pyramid cities’ which were prevalent during the Old and Middle Kingdom, had a regular city layout. These cities were preconceived and created by a royal decree to house the workmen and masons constructing the pyramids, the priests performing the royal funerary service, as well as tenant farmers and laborers

providing maintenance of the monuments. However, around this nucleus, the community soon started to develop and subsequently lawyers, doctors, scribes, craftsmen, tradesmen and all the other elements of a flourishing society came together in these cities (Lampl 1968, 25; David 1986, 1).

The discovery and excavation of Kahun has a vital importance for the town seems to have remained almost untouched since it was abandoned. The town has revealed valuable data concerning the physical appearance of a 'pyramid city.' Furthermore, it is the first time that a complete plan of an Egyptian town was uncovered.[6]

The town of Kahun was founded around 1895 B.C. to house the workmen employed for building the nearby pyramid and temples of King Sesostris II (or Senusret II) of the 12th dynasty. The town was given the name of "Hotep Sesostris," meaning "Sesostris is pleased or satisfied." It was originally located in the province of Fayoum, south-west of modern Cairo, the largest of the country's oases.

Kahun was evidently laid out according to a regular plan based on a geometric scheme by a single architect who was probably also responsible for the construction of the king's pyramid at Illahun (Figs. 8 and 9). The town was rectilinear in configuration and surrounded by a thick brick enclosure wall on three sides, the north, the west and the east. However, W. F. Petrie has suggested that the site was originally walled on four sides since there is strong archaeological evidence indicating that the southern part could not have been open.[7] Inside the wall was arranged in two unequal sections. The eastern part of the town was almost square in shape. The western part being much narrower was divided from the eastern part by a thick mud-brick wall. In fact, this wall seems to have been constructed to separate the wealthier quarters of the government officials or the professional workmen of a higher status from the concentrated area of the ordinary workmen's houses (David 1986, 104). This clearly indicates that the city of Kahun was zoned according to the different types of buildings for different social classes.

[6] The site of Kahun was excavated in two seasons by William Flinders Petrie, from 1888 to 1890.

[7] Petrie discovered the remains of a gateway towards the southern end on the east wall which is also missing. This led him to the conclusion that the half of the eastern wall and the entire southern wall had been lost. For more information see Petrie (1890 and 1891).

The streets and houses were laid out in regular lines. The houses were arranged in large blocks of single or double row houses accessible by side streets branching off at right angles from a main artery. The town was divided into several recognizable main areas via the organization of streets and houses.

The most important part was the so-called 'Acropolis' situated on a high platform. It was located next to the northern enclosure wall and dominated the northern part of the city. The whole of the 'Acropolis' was occupied by a single large house entered from an open square (Lampl 1968, 26). This is believed to be an official residence built for the king to rest when he came to visit the town and inspect the progress of the construction work.

To the south of the 'Acropolis,' backing on the thick separation wall which divided the town into east and west sections, were the blocks of dwellings or stores with one repeated plan (David 1986, 108). The largest of these units which had two chambers is assumed to have been used as a family tomb later in the 19th and 20th dynasties.

To the east of these repeating units and on the southern side of the town were three large houses. Yet, it is difficult to determine their plans because they have been much altered throughout antiquity. According to Petrie, nine storerooms forming a square block were arranged as a complete unit against the street wall.

In the east, there were five streets of workmen's houses behind these southern residences. These dwellings were smaller with only four rooms. Petrie had difficulty in restoring the precise plan of these streets for the southern end is completely and the eastern end partially destroyed by denudation. However, the discovery of a stone channel for drainage indicates that the concept of street drainage existed in Kahun (David 1986, 109).

There were five great houses along the north enclosure wall of the city which were all built according to one plan. These rather large townhouses were most probably inhabited by high government officials.

In the western division of the town, there were eleven streets containing workmen's houses, each of which had four or five rooms. The physical arrangement of the rooms was obviously preplanned. The design of the houses followed a

repetitive plan in each block and it is evident that the houses and the sections of the town were carefully planned to meet specific official requirements.

According to archaeological evidence, the site of Kahun had two brief periods of occupation. The first, which lasted slightly over a century, started with the foundation of the town during the reign of Sesostris II in the 12th dynasty and ended towards the end of the 13th dynasty. The second was during the New Kingdom in the reign of Amenophis III. However, we should state that during its short and intermittent existence, Kahun was a considerably more important urban centre than merely a place to house the pyramid workforce. It inevitably brought unprecedented urban activity and prosperity to the area.

Despite its exceptional circumstances, the city of Amarna also provides us with a clear instance of the regular city planning in ancient Egypt.[8] The 'idealist' king, Amenophis IV, made a courageous attempt to break away from the increasing supremacy of Amun and the political power of his clergy. For many, this was the greatest religious revolution ever attempted in history. This pharaoh introduced a single deity, Aten or the sun-disk, rejecting all the traditional gods of ancient Egypt and took the name "Akhenaten" meaning the "glorified spirit of Aten." Subsequently, he decided to abandon both Memphis, Egypt's administrative capital, and Thebes, its religious center. He decreed a new capital to be founded around 1366 B.C. in the 6th year of his reign.[9] A proclamation inscribed on one of the city's boundary stones narrates the following:

> Then said Akhenaten: "Bring me the king's companions and the great ones of the palace, the supervisors of the guard, the overseers of works, the officials and all of the court in its entirety." So they were led to him at once, and they lay on their bellies in his majesty's presence, kissing the ground before the great god. Then said his majesty to them: "Behold Aten! The Aten wishes to have a city made for him as a monument with an eternal and everlasting name…[10]

[8] Actually, urbanism had become a royal pursuit in New Kingdom. However, we do not possess sufficient data to determine its overall design principles. Although not typical, Amarna is the only New Kingdom city of which nearly the total structure has been well preserved.

[9] The earliest date encountered on any monument at Amarna is Year 6 of Akhenaten. No evidence of an earlier period has been found. For more information see Badawy (1968).

[10] The quote is from Reeves (2001, 103).

The newly founded capital was given the name “Akhetaten” meaning the “horizon of Aten.” It was located on both banks of the Nile in the Hermopolitan nome, about 480 km north of Thebes, the modern town of Tell el-Amarna. Many scholars aptly hold the view that the foundation of the city was artificial. It was built quickly and was short-lived. Like Kahun, Amarna was probably designed and constructed by a single architect. The settlement was established from the very beginning according to a carefully thought-out geometrical scheme (Reeves 2001, 137). It was enclosed and guarded, indicating some degree of official control. The main framework of the city was formed by three streets running north-south parallel to the river and meeting secondary transverse streets at right angles. The excavators named the three main streets as the Royal Road (nearest to the Nile), West Road and East Road. Two shallow valleys running east-west divided the city into three parts, the South City, the Central City and the North Suburb (Fig. 10). Each had its own characteristics and consisted of buildings belonging to a certain social class which may be said to indicate zoning.

The South city was most probably built shortly after the Central City was laid out (Fig. 14). It seems to have contained the residential and industrial quarters. It was occupied by the wealthiest officials of the town such as the vizier, the high priest, the chief architect and the military commanders as well as more modest folk such as the sculptors (Badawy 1968, 78). The residential blocks or the villas have been almost entirely excavated in this part of the town. However, according to the current archaeological evidence, the streets were hardly laid out in regular lines.

Today the ancient administrative heart of Amarna is referred to as the Central City, bordering the Nile. In antiquity, it was known as “the Island.” The Central City consisted of palaces, temples, government offices and warehouses. Only this part of the site was laid out on a true grid (Figs. 11 and 12). The self-contained blocks were located according to their function and divided by straight streets (Reeves 2001, 122). The main artery was the Royal Road. It came from the south, passing through the South City and proceeded to the Central City, between the official palace and the royal estate (Fig. 13). The rest of the Central City on the west was connected to the Great Palace by a bridge spanning over the Royal Road (Badawy 1968, 80).

The North Suburb, separated form the Central City by a valley, was inhabited by the middle class of lower social status than those in the South City. It had business areas and slums (Reeves 2001, 120). This part of the town seems to have had no systematic or regular planning. The houses were smaller and followed a common design.

In addition to the main urban center of Amarna, we should also mention a village located in an isolated spot to the east of Amarna. This village was intended for the workmen of the rock-cut tombs in the vicinity of Amarna (Badawy 1968, 110). It certainly resembles Kahun in many respects. The settlement was square in shape and uniformly planned (Fig. 15). Like Kahun, it was divided into two unequal sections. In the eastern section, four rows of identical houses were set side by side along the four streets running north-south. The western section divided by a wall was assumed to be built later and consisted of two rows of houses quite similar to those in the eastern section. The layout of the village seems to fit perfectly on a grid pattern.

After Akhenaten's death, his religion was abandoned. Consequently, Amarna fell into disuse and was soon completely abandoned. The center of royal activity was moved back to Thebes by Akhenaten's successor, Tutankhamun. Thus, the occupation at Amarna lasted only fifteen years and finished around 1350 B.C.

To conclude, it can be taken as certain that achievements in Egyptian planning were the results of the strong central power which called upon many gifted architects and planners to strive for perfection in their products. Although there is no evidence that geometric, orthogonal and axial planning was common in Egyptian cities, the regular planning based on a rigid geometrical scheme obviously existed and it was deliberately applied in various contexts.

2.1.2. The Grid in Mesopotamia: Babylon

Ancient Egypt has always been a strange and mysterious land inciting curiosity in the minds of both ancient and modern travelers alike. Many centuries after their disappearance, the unique stone ruins of the Nile Valley have been successful in keeping alive the memory of the Egyptian civilization. On the other hand, the Mesopotamian civilization does not seem to be as fortunate as Egypt. The

extensive outlines of the once famous Mesopotamian cities such as Babylon and Nineveh had long remained buried under sand, mud and great depths of accumulated debris. However, some 150 years of investigation is no longer in its infancy and the enthusiastic studies in the Mesopotamian history are revealing the curiosities of this ancient civilization.

Geographically, Mesopotamia is the name given by the ancient Greeks to the land corresponding approximately to present-day Iraq. It literally means "between the rivers," referring to the Tigris and Euphrates which rise in the mountains of Anatolia and flow in parallel courses down to the Persian Gulf (Fig.16). Unlike the regular inundation of the Nile, the floods of the Tigris and Euphrates are violent and unpredictable. Thus, it has been assumed that proper irrigation, flood control and drainage systems could only have been maintained by an elaborate communal organization. A great increase in population paved the way for these communal centers to develop an urban character (Lampl 1968, 13). In the middle of the fourth millennium B.C., a great number of prosperous walled settlements which may be called cities emerged in this region.[11] Archaeological evidence justifies the assumption that these cities were surrounded by irrigation systems, villages and agricultural fields and mostly flourished around a temple precinct of the patron deity. Their political organization has been commonly considered as independent and self-contained 'city-states.'

However, it seems impossible to arrive at an overall picture of the 'Mesopotamian city' since each had its own peculiarities varying greatly according to period. Nevertheless, being aware of the fact that no culture had a typical city to be used as a paradigm, we may still develop a satisfying model of the Mesopotamian city. First of all, the Mesopotamian city was the center of both religious and political power. Therefore, temple and palace were the basic urban institutions which defined the Mesopotamian city. In early periods, it has been agreed that all means of production and economic activity in cities were controlled

[11] Some scholars suggest that the Mesopotamian civilization was the first and oldest urban civilization in world history. However, this 'reckless' assumption has been severely criticized by some other scholars as over-generalized. Moreover, there is an ongoing discussion on the criteria to identify a settlement as city. For example, Childe (1950) theorized an oversimplified system containing ten elements to distinguish the earliest cities from villages. For more discussion see Çevik (2005).

by the temple, but scholars have been convinced that a strong palatial economy existed in later periods as well (Van De Mieroop 1999, 9). In fact, the Mesopotamian cities were originally governed by an assembly of elders who gave one man the authority to rule. Yet, the concentration of power in one hand inevitably led to the establishment of kingship.

The Mesopotamian king possessed an absolute political authority. Yet, he had certain obligations to his people. Above all, he had to ensure that they were fed and protected from enemies. The king was also responsible for the construction and maintenance of irrigation canals. He led in war, provided justice and averted divine wrath against his people promoting the cult. His powers seem to have been unlimited. Indeed, he was believed to be selected by the gods for kingdom. In return for this care, his people had to pay taxes and serve either in agriculture or in war (Van De Mieroop 1999, 119).

A text inscribed on some tablets which was discovered in Haradum, a Babylonian outpost on the Euphrates, suggests that the mayor collected taxes and passed them onto a higher authority (Joannes 1985, 58). Therefore, we may surmise that the contact between the people and the palace was mediated by individuals acting as representatives who were in charge of royal official business.

Many historians point out that the Mesopotamian city was one single unit. Yet, several subdivisions existed within this unit. The city was physically divided into city quarters via roads and canals according to these subdivisions of various professional associations such as craftsmen, tradesmen, bureaucrats, priests and soldiers. Thus, the citizens of the city were allowed to maintain a separate identity according their professions and their ethnic origins as well. Juridically, each of the citizen groups had their own courts which were referred to as ‘assemblies.’ The assemblies had legal right to gather and make decisions (Van De Mieroop 1999, 121). Hence, at this point, owing to the limited but obvious existence of the juridical power and independence of the citizenry, we may draw a tentative conclusion that despite the absolute political authority of the king in the Mesopotamian cities, it also seems likely that unlike the Egyptians the Mesopotamians did not have such a strong centralized government.

According to ancient Mesopotamian perception, cities were not human creation but divine ones. The Mesopotamians thought that the gods built cities as their own dwellings. In other words, each city was the home of its patron deity (Van De Mieroop 1999, 47). For example, the city of Nippur was commonly associated with Enlil, Ur with Nanna and Girsu with Ningirsu. Most strikingly, the so-called Creation Epic, a masterpiece of Babylonian literature composed in the 12th century B.C., narrates that Marduk, the patron deity of Babylon, defeats the gods' enemies, Tiamat, Apsu and Mummu. In this way, he embodies the active principle of order which overcomes the inert and archaic potential of the old forces of nature personified by Tiamat, Apsu and Mummu and he fashions a 'rationally' ordered universe over chaos (Leick 2001, 252). Then, Marduk asks the other gods to build a dwelling, namely Babylon, as his reward. The following lines have been deciphered in this poetic myth written on clay tablets:

> "What shall be the sign of our gratitude before you?
> Come, let us make something for you whose name shall be called the Shrine."
> When Marduk heard this, his face shone exceedingly, like the day and he said:
> "So shall Babylon be, whose construction you have desired,
> Let its brickwork be fashioned and call it the Shrine." [12]

The literary evidence such as this Creation Epic clearly indicates that the city was closely associated with the 'divine' order. In fact, only if the city was in harmony with divine powers in the universe, did its inhabitants prosper and become happy. In cosmic terms, we may also surmise that the concept of the city was the basis of civilization as the Mesopotamian visualized his or her city as being located at the center of the civilized world which could not exist without it.

Similar religious perceptions seem to have characterized the Mesopotamian ceremonial and monumental architecture. In this respect, the Mesopotamian sacred complexes show the tendency towards a sense of perfection and harmony. For example, the plan of the first known complex of monumental buildings in Tepe Gawra dating to the middle of the 4th millennium B.C. clearly indicates that there

[12] The Creation Epic, tablet VI, see also A. Heidel. 1951. *A Babylonian Genesis*. Chicago. pp. 148-149.

had been a great concern for balance, the use of symmetry and axes in Mesopotamian planning (Lampl 1968, 19). The archaeologists have discovered three temples concordantly arranged around a large courtyard forming a kind of *acropolis* (Fig. 17). The search for balance and harmony is also revealed in the Mesopotamian secular buildings. The palace at Kish from the Early Dynastic period is a good example demonstrating the planning principle of such structures. Similar to the attitude at the sacred complex of Tepe Gawra, narrow rectangular rooms were arranged in rows around large courtyards as primary planning elements after the general shape of the structure had been determined. In the Neo-Sumerian period, this symmetrical and axial approach reached its classic form especially in temple complexes or '*ziggurats*' and hardly changed throughout history (Fig. 18 and 19). But, it must also be noted here that symmetry and balance were mainly applied within the individual buildings and their facades, but there was little regard for an over-all compositional principle (Lampl 1968, 19-20). In other words, the different buildings in the precinct were hardly aligned, thus, their architectural relationship with one another in the layout can be regarded as quite weak and indifferent.

However, unlike the temples and palaces, what we know about Mesopotamian city planning is very little due to the lack of sufficient archaeological data. Nevertheless, we may safely state that planned cities show an apparent concern for regularity. In this respect, although it is not the oldest and biggest city in Mesopotamia, Babylon has gained great importance for it reveals much about the nature of a Mesopotamian city (Fig. 20).

Actually, we have hardly any archaeological data from periods earlier than the first millennium B.C. There is little evidence that Babylon was anything other than a small town before the Old Babylonian period (1800-1600 B.C.). It was probably in the 19th century B.C., after the collapse of Ur III Empire, that Babylon became a 'city' (Leick 2001, 249). From the records preserved in other sites, we know that the Amorite chief called Sumu-abum built the city walls and fortifications and made Babylon the center of his operations around 1894 B.C. He founded a dynasty which lasted about 300 years. In later generations, Hammurabi is believed to have rebuilt the city towards the middle of the 18th century B.C. The inscriptions of Hammurabi recording construction activities such as building and

restoring temples, city walls, public buildings and water canals for irrigation have been attested at Babylon. However, the archaeological data concerning early planning in Babylon comes mainly from the period of Nebuchadnezzar II (604 B.C. - 562 B.C.).

During Nebuchadnezzar's reign, Babylon became the new metropolis of the world representing all the aspirations of an imperial capital. Thus, Nebuchadnezzar's Babylon was intended for an ever-lasting monumentality. It is likely that the city had the appearance of a regularly planned city and the layout of the city hardly changed in later periods (Fig. 21). According to Herodotos, Babylon was "intersected by straight streets, some parallel and some at right angles to the river." Herodotos in his *History* (1.178.) gives a brief account regarding the physical appearance of the city as follows:

> In Assyria there are many great cities, but the most famous and strongest, and the one where the royal palace was established after the destruction of Nineveh, was Babylon. This is the kind of city it is. It lies in a great plain each side being one hundred and twenty stades, it is a square. So the circumference of the city of Babylon is some four hundred and eighty stades. Such is its bigness and it is planned as no other city of which we know.

According to modern scholars as well as the ancient, the city was regularly laid out with a celestial orientation, emphasizing the importance of Babylon in the fields of astronomy and geometry (Owens 1991, 31). It was surrounded by a double fortification wall reinforced by strong towers and a moat. The system of main streets led to eight gates. The holy precincts of Esagila, the temple of Marduk, and Etemenanki, "The Foundation of Heaven and Earth" or the Tower of Babel occupied the center of the city (Fig. 23).

The Main (Southern) Citadel was situated on a high platform within the northern city ramparts and fortified by its own enclosure and gateway. It was a huge administration complex with garrison buildings, palaces, throne room and the Hanging Gardens, one of the so-called "Seven Wonders of the Ancient World," all arranged around five huge courtyards (Fig. 22).

The monumental "Processional Way" ran parallel to the river to the east of Esagila and the Citadel, coming from the north through the famous Ishtar Gate towards the New Year's Festival house. This sacred road was paved and provided with splendid decorations all along its course (Oppenheim 1977, 139).

Lastly, we have to mention that Babylon could be contemplated as a cosmic 'pillar' assuring continuity and renewal. In fact, the concept of continuity was important to ancient Mesopotamians. In terms of urbanism, they showed great respect to the past and brought no new innovations but some extensions based on the existing structure of the city. Therefore, due to the obvious presence of regular layouts in some parts of the Mesopotamian cities, we may safely assume that –although not based on strict geometrical rules –a type of systematic planning most probably existed in Mesopotamia from the earlier times.

2.2. The Grid in the "West"

2.2.1. The Grid in Etruria: Marzabotto

Etruscan civilization which is believed to have profoundly influenced ancient Rome, flourished between the Tiber and Arno Rivers of Italy (modern Tuscany) in the 7th century B.C. (Fig. 25). The Etruscans, as we call them, were called the Tyrrhenoi by the ancient Greeks and the Etrusci by the Romans; however, they called themselves Rasenna (Scullard 1967, 15). The Etruscans were gradually conquered by the rising Roman power and the distinctive features of their culture had become largely absorbed by the beginning of the Christian era.

It is difficult to put together a comprehensive history of Etruscan civilization since most of their own records have not survived to our day. In addition, some preserved written Etruscan documents have not been fully deciphered. In this light, our knowledge of the Etruscan civilization comes primarily from the careful investigations of modern scientific archaeology and the Greek and Roman writers who were mainly concerned with later periods in the Etruscan history at a time when it came into contact with Rome.

As to origins of the Etruscans, there are two different points of view. The first claims that the Etruscans were certainly indigenous in Italy. For example, Dionysius

of Halicarnassos, who lived at the time of Augustus, upon enquiring into the matter, decides that the Etruscans were natives of Italy. On the other hand, the second view asserts that they probably could have come from overseas and combined with the local peoples to create the culture as most of the ancients believed. For instance, Herodotos (*The History*, 1.94.) states that the Etruscans came by sea from Asia Minor and settled in Italy. He records the following:

> …For the part that should draw the lot to remain, he appointed himself to be king, but for the one that should leave the country, he appointed his son, whose name was Tyrrhenos. Now the part that was chosen by lot to leave the country came down to Smyrna and contrived boats for themselves and into them they threw everything that useful that would go aboard a ship, and they sailed away in quest of a country and a livelihood. They passed many nations in their progress and came to the Umbrians. There they established cities and there they live till this day. From being called Lydians they changed their name in honor of that son of their king who led them out, they called themselves, after him, Tyrrhenoi.

The archaeological evidence also supports this view to some degree; the difference of the Etruscans' burial customs and language from those of their neighbors like the Villanovans makes it likely that at least the ruling class was not native (Mackendrick 1983, 30). Indeed, archaeology reveals that Etruscan civilization owed much to 'eastern' influences from the 7th century B.C. when the contents of the tombs became increasingly enriched with gold and silver works of art from Egypt, Cyprus, Phoenicia, Syria and Mesopotamia. Moreover, the luxury of the Etruscans together with their love of feasting, dancing and music, of games, jewellery and bright colors seems more 'oriental' than Italic (Scullard 1967, 51). According to ancient writers, the double pipes were introduced to Italy form Phrygia and the trumpet from Lydia. This evidence has persuaded some scholars that Herodotos was right, but some others still maintain that all these 'oriental' influences in Etruscan civilization are not inherited but only borrowings. Therefore, rather than concentrating more on the unsolved origin problem of the Etruscans, it is much safer to agree merely on the fact that the Etruscan civilization developed on Italian soil.

Political organization in Etruria was mainly based on independent and autonomous units, namely city-states. It has been suggested that in the earliest stages, the political power was exercised by strong leaders, or kings. The archaeological and literary evidence clearly demonstrates that the Etruscans were once governed by monarchy which had similar features with the 'eastern' examples.[13] The Etruscan kings held the absolute authority to rule, they led in war, in religion and in the administration of justice. However, in the course of time, the authority of the kings weakened as that of the nobles increased and consequently monarchy was superseded by oligarchy during the 6th and 5th centuries B.C. (Scullard 1967, 224; Mackendrick 1983, 42). In fact, this was not an isolated phenomenon and was experienced in many parts of the Mediterranean world. The transition from kingship to strong military aristocracy was of course not necessarily identical in all the Etruscan cities. It is likely that there could have been an intermediary stage between monarchy and oligarchy.

The leading oligarchs in the Etruscan cities were called *principes* by Roman writers. Livy equated the *principes* with magistrates. They formed the ruling class and met in assembly corresponding to the Roman Senate. The primary knowledge about the function of the Etruscan magistrates comes from the inscriptions on tomb monuments. There are three main magistrates attested on epitaphs, namely the *zilath*, the *purthne* and the *maru*. The *zilath* is generally regarded as the chief magistracy exercising different functions. The *maru* probably exercised the function of president in the college of *zilaths*. Lastly, the title *maru* belonged to the priests who formed a separate college with some special functions (Scullard 1967, 226-228; Mackendrick 1983, 41-45).

Yet, at this point, we have to raise the question of what constitutional rights the citizens of the Etruscan cities had. In response, we observe a deep gap in Etruscan society between the oligarchy and its dependent population. This leads us to a striking feature of Etruscan culture that there was hardly any middle class in society. There is insufficient evidence to establish the existence of a popular

[13] The Greek lexicographer Hesychius of the fifth century recorded that the Etruscan equivalent to the Greek word "*arche*" was "*drouna*" which might be connected with the Lydian word "*tyrannos*" to describe an unconstitutional ruler.

assembly in cities. Nonetheless, it cannot be supposed that a free population did not exist or that all institutional organization was lacking.

Many historians posit that the sophisticated and rigid political organization of the Etruscan civilization is also to be reflected in their architecture. According to Boethius (1964, 3), the Etruscans had certain architectural ideas and strict rules which had no background in 'primitive' architectural attempts in Italy. They apparently introduced symmetry in the planning and orientation of their temples or sacred monumental buildings and public structures as well (Fig. 26).[14] Thus, it can be safely put that the predilection for symmetrical and axial arrangement of temple courts and public squares seems to have been a characteristic of the Etruscan architecture.

The Etruscan civilization has been commonly regarded as the 'first' culture of cities in Italy. Similar to monumental architecture, the foundation of an Etruscan city represented a combination of religious lore and architectural skills which the Romans believed they themselves had inherited in founding their own cities. For example, the Etruscan oriented the site by the use of a surveying instrument, the *groma*, a word which is derived from the Greek word *gnoma* or *gnomon*. Placed at the center, the *groma* provides the cardinal points; from it two main straight axes are marked out, namely the *cardo* running from north to south and *decumanus* from east to west, which distinguishes Etruscan planning from that of the Greek.[15] These two lines, intersecting at right angles, form a frame on which a regular grid system of lesser streets can be laid out (Scullard 1967, 76). It must be noted here that this celestial orientation appears to be reminiscent of Mesopotamian architecture.

However, Marzabotto, though laid out on a true rectangular grid, does not have two main roads crossing at the center. That is to say, the axial arrangement of *cardo* and *decumanus* is absent. As seen from the air photographs of the city, it conforms more to the so-called Hippodamian fashion of the Greeks (Figs. 27 and 28). Thus, it is likely that the Roman attribution of the use of *groma* to the

[14] In fact, no Etruscan temple has survived earlier than 600 B.C. However, Vitruvius (4.7) in his book on architecture provides a description of the architectural features of the so-called Tuscan style.

[15] The Greek grid pattern is not based on an axial crossing of *cardo* and *decumanus* but on a pattern of alternating wider and narrower streets which will be discussed in detail later.

Etruscans may be faulty. Or, one may claim that the planners of Marzabotto, for a later Etruscan colony, adapted the earlier axial fashion to the 'new' Hippodamian one and decided to establish their new city accordingly. Either way, Marzabotto remains as one of the few examples revealing the internal structure of an Etruscan city.

The site of Marzabotto, whose ancient name may have been Misa or Misna (but remains still unknown), is in the valley of Reno, some 25 km south of Bologna and near the modern village of Marzabotto. It was founded in the early 5th century B.C. on a virtually virgin ground. The ancient city of Marzabotto was basically an economic center for trade and industry, especially for iron, tile and pottery works (Mackendrick 1983, 36).

Marzabotto consisted of two parts. The first part is a large terrace while the second is a height to the north-west of the city. The former was mainly the inhabited site and the latter was a religious center with temples and altars. Yet, the whole settelement was planned and executed as one single unit. The buildings in the sacred area, which was originally about 20m above the other part, were aligned with the buildings below. Scullard (1967, 205) points out that this sacred citadel seems to have determined the 'ritual' layout of the city oriented in accordance with some astronomical and priestly rules.

The main street of the city was paved and ran in a north-south direction. It was crossed by three streets at right angles running east-west. Thus, the whole area consisted of blocks of rectangular *insulae*. They were separated by boundary channels and within them the houses were divided into rectangular rooms which were similarly oriented. The house plans closely resemble the 4th century houses discovered at Olynthos (Mackendrick 1983, 35).

The sacred area was separated from the inhabited town below by a terraced wall. On the slopes of the hill was an elaborate water system with a central cistern and distributing channels. Further north was a cemetery while a second one was situated east of the city. Lastly, it must be added that unlike the Greek cities, Marbazotto lacked an *agora* or a main public space for gatherings within the city itself.

To recapitulate, sites like Marzabotto give satisfactory evidence for the use of a kind of rectangular or square grid system of streets by the Etruscan planners. Nevertheless, the question is still open as to whether the Etruscans invented the grid in Italy or whether the Etruscan grid was solely an import from the Greek planning mentality.

2.3. Nature of Interrelations between the "Eastern" and "Western" Worlds

Thucydides (2.40.) conveys the famous Athenian politician Pericles' claim as "We love wisdom without becoming soft." Many scholars have suggested that using the verb *philosophein*, Thucydides implies that the concept of wisdom was restricted to the archaic and classical Greeks. Thus, at the same, it has been implicitly suggested that although the 'other' ancient cultures of the 'East' obviously had scientific knowledge, unlike the Greeks, they did not inquire into the nature of that knowledge but used it only for technical practicality. It is true that they had different ways of the working of the human mind. For example, the 'Eastern' people thought that the universe was created and controlled by external divine forces, while the Greek universe itself was full of gods. Ehrenberg (1974, 7) holds the view that the Greeks were the first who tried to understand both the *cosmos* and their own minds. Greek science learned much from the discoveries and researches of the 'East' but it attempted to recognize the inherent principle and its rational definition. On the other hand, the existing archaeological and literary evidence seems to justify the hypothesis that the 'East' hardly ever theorized scientific knowledge. Nonetheless, there is still a lack of information to push for such an oversimplified conclusion.

However, despite this presupposed difference in mentality, the Greek culture was also inevitably shaped by the conditions that were closely bound up with the neighboring lands, the Mediterranean lands. There is no reason to doubt that in the first millennium B.C. (and probably even earlier) the interrelations with the 'Eastern' world were quite intensive. For instance, a large number of Egyptian objects are frequently attested on many Greek sites and some Greek objects have also been found in Egypt. It has been suggested that the Greek decorative art of the geometric-orientalising period was very much influenced by the Egyptian art forms.

Moreover, some symbols in the Greek alphabet are supposed to be borrowed directly from the Phoenician alphabet and adapted for particular sounds. Lastly, we should also mention that the analysis on the proportions of the monumental, archaic Greek statues clearly indicates that the ancient tradition of Greek standing sculptures of naked male figures, *kouroi*, was affected by Egyptian prototypes.[16]

Therefore, we may assume that the early development of Greek culture owed a great deal to the Near East (it has also been asserted that the 'Eastern' influence passed to Etruria through Greece). It is striking to see that the Ionians and Aeolians, settled east of the Aegean, have been regarded as the most progressive among all the Greeks living in prosperity. However, to be on the safe side, we must state that interpreting the influence of one culture over another may be speculative.

[16] For further discussion see Burkert (1992) who devoted an entire book to this question which is mostly concerned with literature.

CHAPTER 3

QUESTIONS OF ORIGINS: SOCIETY AND THE GRID

3.1. The Birth of the *Polis*

Many historians concur on the fact that the *polis* was by far the most common and historically important type of state in the ancient Greek world. As a result of colonization movements, this also appears to be true for the Greek cities in Italy and Sicily, on the shores of the Black Sea, and eventually almost along the entire Mediterranean coastline. According to Ehrenberg (1964, 27), the *polis* represented the Greek lifestyle and carried Greek culture everywhere it reached. The term *polis* is conventionally translated as "city-state." However, many classicists often point out that this stands as a rather poor translation because the *polis* implied more than the mere combination of the urbanization and the state formation in the archaic period.

In discussing the *polis*, several modern scholars tend to view this ancient Greek concept through 19th century eyes in contrast and in relation to the newly founded European nation-states (Murray 2000, 234). Yet, such a point of view presents obvious pitfalls for a true understanding of the nature of the *polis*. Discussing an ancient concept with modern political ideologies can sometimes be dangerous or at least misleading. Thus, to overcome the problem of misinterpretation, the ancient's own conception of the *polis* inevitably gains importance in order to get a more convincing picture of its constitution. Most Greeks believed that the formation of the *polis* was "a decisive step from bestiality to humanity and civilization" (Hansen 2004, 13). In sources of the Archaic and Classical times, more than eleven thousand occurrences of the term *polis* have been identified so far (Hansen 2004, 12). This fact alone indicates that the ancients could hardly speak, think or write about public matters without using the term. The concept of *polis*, therefore, was crucial for ancient Greek writers. Aristotle in his

Politics (1.1253a 2-6), for example, describes *polis* as the perfect form of society for human beings:

> Man is by nature a *polis* animal and one who is *apolis* (does not participate in the *polis*) because of its nature and not by accident is either subhuman or superhuman.

Similarly, the pre-Socratic philosopher Demokritos (fr. 252) claims that "a well governed *polis* is the greatest prosperity and everything depends on that." Hence, it is obvious that the concept of the *polis* mattered to ancient Greeks. They considered the *polis* to be of the greatest importance since it provided a sense of common Greek identity for its citizens.

There is some consensus among the historians that with few exceptions, the rise of the *polis* can be dated to the late 8th century B.C.[17] Yet it is not easy to write a 'true' history of the *polis* in order to obtain a clearer view of its beginning, climax and end. An important reason for this may be that the *polis* was an abstract and conceptual representative of a large number of independent states differing in form and development (Ehrenberg 1937, 147). No two Greek cities were exactly the same due to the diversity in size, landscape, urban pattern, population and political structure. In order to create an abstract model of the *polis*, Murray (2000, 233) suggests to ignore the individuality of the Greek cities to a certain extent. But any imposed generalization runs the risk of mistaking the ideal for the real.

Various scholars have introduced several definitions of this abstract concept of the *polis* with slight differences. For instance, Victor Ehrenberg (1964, 88), who is one of the most influential scholars studying this topic, defines the *polis* as the state of the citizens. But he also points out that this must not be understood merely as a union of individuals but as a personal share in political affairs. He also regards this formation as a religious and political community (Ehrenberg 1937, 147). Second, Ian Morris (1991, 26) similarly states that the *polis* was a complex hierarchical society formed on the basis of the notion of citizenship. According to him, it was not a physical territory or a group of political offices but a system of

[17] This dating seems correct but not everywhere in ancient Greece. See Bintliff (1997). The rise of the *polis* was not sudden but the product of a long evolution. See Polignac (1995), Ehrenberg (1937, 147) and Hansen (2004, 16).

relationships between its citizens. Third, Mogens Hermann Hansen (2004, 19) considers the *polis* as a center of self-governing (or independent) political community. Lastly, Jacob Burckhardt (1998, 43) posits that the *polis* was a small independent state controlling a certain limited area of land.

If we are to accept the general assumption that the *polis* was basically 'a state of the citizens,' then who constituted the citizen body? The answer to this question appears to be revealed in the ancient sources; Aristotle identifies as a citizen a man who shares in the government.[18] He also adds that, though not participating in the government, a man still continues to be a citizen by descent or special grant and therefore has the full legal rights as a member of the *polis*:

> We now declare that one who has the right to participate in deliberative or judicial office is a citizen of the state in which he has that right … (*Politics*, 3.1275b 18-23)
> And although the goodness of a ruler and that of a subject are different, the good citizen must have the knowledge and the ability both to be ruled and to rule, and the merit of the good citizen consists in having knowledge of the government of free men on both sides …
> (*Politics*, 3.1277b 14-17)
> A citizen in the fullest sense means the man who shares in the honors of the state… (*Politics*, 3.1278a 35-38)

Thus, it can be interpreted from Aristotle's words that the citizens of a *polis* were adult male Greeks. Children, women, slaves and foreigners were excluded from participation in the *polis*. According to Aristotle, they were essentially inferior and consequently could not participate in the government. He establishes a hierarchy within the human beings at the same time:

> And the union of natural ruler and natural subject for the sake of security (for one that can foresee with his mind is naturally ruler and naturally master and one can do these things with his body is subject and naturally a slave; so that master and slave have the same interest). (*Politics*, 1.1252a 31-35)
> Thus the female and the slave are by nature distinct (… but one thing for one purpose; for so each tool will be turned out in the finest perfection, if it serves not many uses but one). Yet

[18] Aristotle conceptualized the *polis* in the 4th century B.C. when it had fully completed its development. Thus, the structure of the citizenship in the *polis* expressed by Aristotle may not have been exactly the same as in the earlier Archaic periods.

> among barbarians the female and the slave have the same rank, and the cause of this is that barbarians have no class of natural rulers. (*Politics*, 1.1252b 1-7)

Both the concrete archaeological evidence and the literary testimony are crucial and indispensable to obtain a correct chronology of the *polis*. In this respect, the earliest attestation of the term *polis* preserved on stone was found in Dreros on Crete in the 7th century B.C. (Ehrenberg 1943, 14). This Cretan inscription containing a public law uses the term to denote both a complete political community and urban center. Furthermore, some ancient writers such as Archilochos of Thasos (fr. 228; 13.2) and Tyrtaios of Sparta (fr. 4.4; 10.3) similarly named the communities as *poleis* in the sense of a community of citizens by the middle of the 7th century B.C. (Hansen 2004, 17).

Yet, the study of the etymology of the term *polis* is also extremely important in helping to trace its origin since such a study takes us back to the earlier periods before the term first appeared in the ancient written sources. According to Hansen (2004, 16), the Greek word *polis* is related etymologically to Old Indian *pur*, Lithuanian *pilis* and Latvian *pils*.[19] The original meaning of these words was "stronghold" or "castle."

Most importantly, however, the Greek *polis* is similar to Mycenaean and Minoan palace states in the sense that it combined the urban center (or town) and countryside in a community of place (Haggis 2002, 145). However, it drastically differs from the palace states in terms of its political structure and architecture. For instance, the economy of the Mycenaean state was controlled by a king and his household.[20] Thus, the political organization of the palace states was ultimately a monarchy or kingship.[21] Nevertheless, we may possibly argue that beside the king, there was a class of powerful individuals or noble lords as their dwellings and graves were located near the royal citadel (Ehrenberg 1964, 10). According to

[19] All these three languages as well as ancient Greek belong to the Indo-European language family.

[20] Despite their smaller scale, the organization of these early states can be comparable to Near Eastern states in their bureaucracy.

[21] It is not likely that there was a large Achaean empire in Greece. Agamemnon in the *Iliad* was only the chief commander of the army in his relation to other kings. In addition, the presence of several palaces precludes the fact that there had been one single state.

Haggis (2002, 146), the architecture of the Mycenaean palace with its *megaron* complex was highly monumental symbolizing the absolute power and authority of the king.

Following the Bronze Age, towards the 12th century B.C., the Mycenaean world experienced a terrible catastrophe after which its palace states with their economic, social and political structures collapsed[22] (Raaflaub 2005, 28). The cause of the collapse of the Mycenaean palaces still remains obscure.[23] However, it seems that this was the result of diverse causes still intensely debated. Some scholars suggest that it could have been due to the complexity of the Mycenaean economic system and a drastic rise in the population. Some others, on the other hand, state that it was due to the disruption of the trading network by the invasions of the so-called "sea people." This period spanning from the fall of the Mycenaean civilization in the 12th century B.C. to the emergence of the first Greek *poleis* in the 8th century B.C. is generally known as the Early Iron Age or the "Dark Age."

It is not easy to study the Early Iron Age settlements since most of the significant sites lie deep under later occupations or were even destroyed by the latter (Morris 1991, 29). But some diligent generalizations may be construed to illuminate the cultural change in this period. In this respect, evidence –albeit considerably limited –clearly shows that the Early Iron Age settlements which were in the territory of palace states and dependent on their authority began to dissolve and diminish after the collapse of the Mycenaean palaces (Haggis 2002, 147). According to Ehrenberg (1964, 11) there was a tendency to split up larger units and general return of the primitive conditions in this period. Hence, it is reasonable to infer that after the fall of Mycenaean kingship, tribal order gained a decisive importance pertaining to the structure of the society.

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[22] The collapse of the Mycenaean world occurs approximately at the same time with the fall of the Hittite Empire and that of the New Kingdom in Egypt.

[23] The question of continuity of the Mycenaean civilization in the Early Iron Age is still being discussed by several scholars. For instance, Ian Morris (1991) suggests that the Mycenaean culture did not completely disappear. According to him, some nucleated settlements survived from the Mycenaean time. Furthermore, grave finds in Lefkandi and Naxos indicate that the complex and hierarchical society of earlier periods continued to exist in Greece from the 11th century B.C. The continuity of cults (many Gods' names are the same) and traditions too, show that the elements of Mycenaean culture survived.

According to Fustel de Coulanges (1980, 124) both the bond and the organizer of the society was religion which was stronger than any material force and political interest. During the organization process of the social orders in an earlier period, the individual families constituted the simplest form of society each having their own idea of the divinity which might be called "domestic religion." Fustel de Coulanges (1980, 110) suggests that this "domestic religion" impeded the mingling of several families. Yet, a possible solution appeared to be the celebration of a worship which was common to all. Therefore, having established a shared religion, the *phratry* which was the union of several families emerged. This process naturally expanded in the same fashion. Hence, in time, several *phratria* adopted a common religion and were united together to form a clan or a tribe. This social grouping by kinship and religion never entirely disappeared even under the changed conditions throughout ancient Greek history (Ehrenberg 1964, 15). Thus, if we are to accept Fustel de Coulanges' social diagram, it is quite plausible to posit that the religious idea and the society carried on developing interdependently and synchronously.

During the Early Iron Age, therefore, the Greek tribes were settled loosely in villages (Ehrenberg 1964, 11). This very inference that many Greeks lived in villages in earlier periods is clearly revealed by Thucydides (1.10) writing about Sparta:

> …and yet they [the Peloponnesians] occupy two-fifths of the Peloponnesos and preside over the whole of it as well as numerous allies beyond; nevertheless, since the city is not unified nor furnished with elaborate shrines or public buildings but settled in villages in the old Hellenic way, it would look inferior.

In other words, hundreds of little societies were living separated in the countryside with no strong religious or political bonds among them.[24] They were so radically isolated that marriage between different groups was not sometimes even permitted (Coulanges 1980, 121). But, eventually, common needs and

[24] These societies essentially lived in the tribal states (or *ethnos*) in ancient Greek land. For further information see Ehrenberg (1964, 24-26).

sentiments brought them together; According to Burckhardt (1998, 45), these needs primarily concerned the defensive purposes against brigands and pirates. This inevitably paved the way to bring earlier villages to settle together in a fortified town. In this regard, *synoecism* may have been the first phase of the *polis* in ancient Greece (Ehrenberg 1964, 26; Burckhardt 1998, 45). It is also confirmed by ancient sources that the *polis* was a union of several rural communities (Burckhardt 1998, 46). For example, Mantinea in the Peloponnesos was constituted of five rural settlements. Similarly, Patras consisted of seven and Tegea of nine. Most strikingly, Thucydides (2.15) tells us that the Athenian legendary hero Theseus first abolished all separate *prytaneis* (councilors) and *archontes* (chief administration). Then, he established only one council and one *prytaneion* in Athens. So, people in Attica would live outside the city on their own land but had only one *polis*:

> … For the time of Kekrops and the first kings, down to Theseus, Attica always had its population distributed among cities with their own town halls and offices, and when they did not have something to fear they did not come together for deliberation before the king, but they each managed their own affairs and deliberated on their own. But when Theseus became king, wielding this power combined with his intelligence, he not only organized the region in other ways but also unified the people in the present city, abolishing the council houses and offices of the other cities and designating a single council house and town hall, and he compelled them to treat this as a single city.

Politically, it appears to be certain that the ancient Greek world witnessed a shift in power from centralized monarchies to powerful individual families in the Early Iron Age. The dispersed and humble communities in this period were dominated by the aristocratic families who constituted the noble class of the ancient society by descent (Snodgrass 2001, 387). This aristocratic rule which was quite common over wide areas in Greece played quite an important role in the evolution of the Greek *polis*. For the socio-political structure in this very early stage of the *polis* formation, the ancient poets Homeros and Hesiodos stand as our primary guides.

There is a hot discussion among the historians whether the world presented in the *Iliad* was basically the description of the Mycenaean Age or whether it was the world of the Homeros' own time in the 9th and 8th centuries B.C. According to Snodgrass (2001, 389), there are two identifiable historical eras in the world described in the Homeric poems: the first one is the fully Mycenaean era and the second is the poet's own day which is commonly placed in the 8th century B.C.[25] Thus, it is possible to some extent for us to obtain a picture of the Early Iron Age world from Homeros. Although the *polis* was not completely formed in this world, it seems quite obvious that Homeros consciously conceptualized the notion of the *polis* and expressed all its essential characteristics (Raaflaub 2005, 25). For example, despite its Panhellenic and trans-Aegean dimensions, the Trojan War in the *Iliad* was narrated as a war between two *poleis* on the opposite sides. Beside, the *polis* represented civilization, community, communication and justice in his epic poem *Odyssey* (Raaflaub 1993, 48).

In the Homeric world, society was constituted of two classes. The noble class who governed and led in war came first. Then, the commoners or the ordinary people followed. They were mainly the nobles' tenant farmers, peasants, craftsmen and hired laborers (Roebuck 1966, 178-180). There were also foreigners and slaves who were essentially attached to the households of the nobles. A very sharp line was drawn between these two segments of society in terms of economic and social distinctions. The common people had no voice in government, because the political control of the community was in the hands of the noble ruling class.

Each of these noble ruling families had paramount leaders who were called *basileus* and who held a pre-eminent position in society. They met in the council and debated the public issues in the assembly (Raaflaub 2005, 29; Ehrenberg 1964, 52). The status of the Homeric *basileus* was determined by their accomplishments and power but the community acknowledged this status only if their deeds and power served it. Homeros (*Iliad*, 12.310-316) voiced a saying of Sarpedon, the leader of Lycians, to Glaukos, his companion: [26]

[25] This idea is also argued in great detail by Moses I. Finley (1979).

[26] Although they are Lycians, the *ethos* described here is, indeed, compatible to the Greek world.

> Why is it you and I are honored before others with pride of place, the choice meats and the filled wine cups…
> and all men look on us as if we were immortals,
> and we are appointed a great piece of land…
> good land, orchard and vineyard and ploughland for the planting of wheat?
> Therefore it is our duty in the forefront to take our stand and bear our part of the blazing battle.

It can be inferred from Homeros that the *basileus* appeared to be the king of the community with a divine lineage. Yet, the *basileus* had certain duties in the religious, military and judicial spheres and a limit of action. His powers rested not on written laws but on customs (Fowler 1966, 85). Thus, he was essentially a chieftain rather than a constitutional king and his rule did never happen to be a real absolutism. The Homeric world, then, narrated an intermediary phase when the old system of powerful kingships was being displaced by rule of the noble families which was followed by aristocratic governments.

Hesiodos who wrote in the early 7th century B.C. slightly later than Homeros mainly focused on the *basileus'* role as judges. He warned that the actions of the *basileus* threatened the community's welfare. In his poems, Hesiodos gives clues that the common people often considered the nobles' exercise of power to be cruel, unjust and oppressive. The poet observed their corruption and thus by continuing to commit injustice, they continued to harm the community (Raaflaub 2005, 35). Hesiodos reflected on the relationship between justice and prosperity of the community. In *Works and Days* (220-221; 259-262) he described the function of Zeus who blessed the just and punished the unjust and Dike who was the goddess of justice as:

> She howls when she is dragged about by bribe-devouring men whose verdicts are crooked when they sit in judgment…
> She rushes to sit at the feet of Zeus, son of Kronos, and she denounces the designs of men who are not just, so that the people pay for the reckless deeds and evil plans of *basileis* whose slanted words twist her straight path.

Hence, towards the 7th century B.C., it seems quite clear that the aristocracy historically existed in many Greek *poleis*. It is reasonable to say that the noble men began to learn how to govern the state with respect for order and the opinions of

others in the aristocratic council (Fowler 1966, 113). This learning process narrowed the nobles' individual interests in time. Thus, the act of governing became a science which was exercised only by the few. As the few were also the rich, their political positions in the state made them not only protect the government but also advance their own interests. This new form of constitution which arose out of the aristocracy is commonly known as oligarchy.

It is not easy to differentiate between the aristocracy (the rule of the 'best' or noble) and the oligarchy (the rule of the few). In fact, according to Ostwald (2000, 388) the oligarchy is not a historical reality in ancient Greece. Yet, theoretical and political studies of Plato and Aristotle fostered the concept of the oligarchy in the following centuries. Plato defines the oligarchy as the government by the wealthy. Aristotle, on the other hand, describes the ruling class of oligarchy with a slight difference as well-provided with resources and ingenious.[27] Aristotle reveals the nature of the oligarchy as follows:

> Of the kinds of oligarchy, one is for the magistracies to be appointed from property-assessment so high that the poor who are the majority have no share in the government, but for the man who acquires the requisite amount of property to be allowed to take part in it;
> (*Politics*, 4.1292a 39-41)
> Another is when the magistracies are filled from high assessments and the magistracies themselves elect to fill vacancies (so that, if they do so from all citizens of this assessment, this appears rather to be of the nature of an aristocracy, but from a particular section of them, it is oligarchy).
> (*Politics*, 4.1292b 1-5)

If the oligarchy was too narrow and too oppressive on the non-nobles who had no direct and effective voice in the *polis*, a tyrant might have appeared to be a solution for a moment as he alone had the power to weaken the stronger and strengthen the weaker (Fowler 1966, 143). In fact, tyrants mostly used the power

[27] Plato uses the word "*plousioi*" meaning the wealthy and Aristotle uses "*euporoi*" which means well-provided with resources, ingenious and well-to-do.

with the help of the people and tried to weaken the oligarchy.[28] Aristotle (*Politics*, 5.1305a 9-10; 22-24) discusses this as follows:

> For almost the largest number of the tyrants of early days have risen from being leaders of the people… and they all used to do this when they had acquire the confidence of the people and their pledge of confidence was their enmity towards the rich.

Therefore, it is not completely wrong to state that the tyranny provided a transition from the oligarchy to the democracy as it bridged the nobles and the non-nobles[29] (Ehrenberg 1964, 46). But, the tyranny has also to be conceived as essentially a form of monarchy since political power was used by a single man according to his own judgments.

After all, an ideal Greek *polis* had to be directed by justice and law –*dike* and *nomos*, – by discipline and order –*eunomia* and *kosmos*, – and by equality and concord –*isonomia* and *homonoia* – (Ehrenberg 1937, 158). A *polis* had to defend itself against selfishness and private interests. It was a growing class of men without land and free peasants who paved the way into a shift in the political and social life in ancient Greece. Against the tyranny and oligarchy, they demanded equality of distribution and equality before law which will be discussed further in the following chapter.

The socio-political concepts which have been discussed so far remain ideal, generalized and abstract models since they had not been transformed into political ideologies until the late 5th century B.C. On the whole, it is indeed difficult to label a Greek *polis* as oligarchic, democratic or anything else in such a period when everything was mobile and in formation. Regarding also the way of political thinking, Lysias (25.8) shows us that the ancient Greeks were quite rational and pragmatic:

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[28] A very good example of this is Peisistratos in Athens.

[29] However, tyranny did not always lead to democracy. For example, Corinth, governed by tyrants, never became a democratic state.

> No human being is by nature oligarchic or democratic, but whatever constitution brings advantage to an individual is the one he would like to see established.

The utmost importance of the *polis* was not only its impact on the political formation of the ancient society but also its designation of both ritual and physical phenomena. In other words, the political formation in the Greek *polis* simultaneously and interdependently developed with religion and urbanization.

First of all, each *polis* was a religious association. The Greek *polis* with its institutions rested on a religious basis (Ehrenberg 1964, 74). No political action of any importance, no assembly of people and no meeting of officials could take place without a ritual sacrifice and prayer. However, such sacrifice and prayer before a battle or assembly did not turn it into a sacred act like a procession at a festival (Hansen 2004, 130-1). Hence, it is possible to infer that there was some distinction between the religious and the political spheres. The inscriptions which acknowledge the separation of sacred and public money of the *polis* also support this inference. In fact, except for some states such as Delphi, the religious sphere never dominated the political sphere (Ehrenberg 1964, 75). There was no clergy or official priesthood in the *polis* constitution. Yet, there was never a strong opposition between religion and politics. It must be taken as certain that the *polis* reinforced the religion and in turn was itself reinforced by the religion.

According to Sourvinou-Inwood (1991, 300), the ritual activities were the defining characteristics of the Greek identity.[30] The ancient Greeks put religion at their center and forged their cultural and political identity through religion (Sourvinou-Inwood 1993, 11). The gods and cults which were common to all provided cultural unity for the ancient Greeks. In this regard, the identity of Greekness was expressed through the Panhellenic cults. On the other side, individual heroes and myths which belonged to one particular *polis* contributed plurality of the *poleis* within this Greek unity.

[30] The direct and full participation in religion was reserved only for the citizens of the *polis* by excluding the foreigners.

The temple building and the *polis* formation are remarkably parallel (Burkert 1995, 205).[31] In other words, as the *polis* developed, temple construction was refined to represent and embellish it. In this regard, the cultural decision to build temples instead of monumental palaces is equivalent to the rejection of the monarchy. The architectural form of the *megaron* which was used in the king's palace in the Mycenaean era began to be used in the house of the god (Fig. 31). Thus, the god took the place of the king and the state ceased to be monarchical.

The development of sanctuaries also indicates an emerging urban consciousness. Some sites like Zagora on Andros (Fig. 32), Emporio on Chios and Lefkandi in Euboia show highly complex and sophisticated architectural planning principles in the Early Iron Age (Snodgrass 1991, 7-9). The planned houses, a temple separated from the settlement and a fortification wall may be taken as the evidence of the presence of a planned urban structure. However, it is not possible to identify these sites as the *polis* with its full connotations. First of all, there are no ancient written sources or archaeological evidence regarding the political organization of these settlements. Although this period cannot be considered as the 'urbanization period,' it is certain that there was an emerging tendency to arrange the cities in an orderly manner with a more comprehensive understanding of urbanism. Furthermore, with the consequence of colonization in the 8th century B.C., some settlements such as Syracuse and Megara Hyblaea which are attested as self-governing political states show the geometric urban layout.

So, how is it possible to identify a city as a *polis?* or, what are the physical components of a *polis?* Hansen (2004, 140-141) describes a *polis* (in the sense of town) as the center of political institutions, cults, defense, industry and trade, education and entertainment. Then, the inference is that a *polis* had to have office buildings, a temple, fortification walls and an open space or *agora* both for the market and place of assembly.[32] Pausanias (10.4.1) reveals the ancient's idea of a city as:

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[31] In fact, Francois de Polignac was the first one who made the link between temple building and the rise of the *polis* (and the idea of territoriality as well). For further discussion see Polignac (1995).

[32] This generalization can hardly be applied to a *polis* in earlier periods. The ancient written sources also belong to the later centuries. However, it is still helpful to discuss this conception for understanding the nature of the *polis* as a town.

> From Chaeroneia it is twenty stades to Panopeus, a city of the Phocians, if one can give the name of city to those who possess no government offices, no gymnasium, no theatre, no market-place, no water descending to a fountain, but live in bare shelters just like mountain cabins, right on a ravine.

According to Miller (1995, 223), the *agora* itself is not a decisive element to identify a *polis*. But by introduction of an *agora* with formal political components a city is turned into a *polis*. Similarly, the fortification walls were not indispensable but were deemed essential for a *polis* since "steep" or "long walls" were among the popular epithets of a *polis* in ancient sources.

There is no attestation of a *polis* which was not the center of the self-governing community. A *polis*, then, was both an urban settlement with its hinterland (sometimes a port or a harbor) and the political center of that *polis*. Other settlements and towns inside the territory of a *polis* were only the centers of habitation (*asty*) without any political institution.

3.2. *Isonomia*

The notion of equality and justice in the early Greek thought essentially originated from a more comprehensive conception of the world and nature which influenced various disciplines far beyond the realms of politics and ethics. In fact, the early thinkers of the Greek world were not primarily concerned with the political phenomena or the structure of society but with nature as a whole (Raaflaub 2005, 49). Physics, politics, ethics and religion were not yet divided into separate fields in ancient philosophy. Man was considered to be a part of nature and thus he subject to its laws. Furthermore, human affairs could be understood and explained by applying relations and rules which were observed in nature.

Vlastos (1995, 57) states that to respect the nature of anyone or anything means to be 'just' to it. So, to destroy that nature is to cause 'violence' and 'injustice.' In this respect, Solon (fr.11) considered the sea as the 'most just' because although being disturbed by the winds, it does not disturb anyone or anything. In early Greek philosophy, harmony in nature appeared to be the most

crucial component in fulfilling cosmic justice. Many ancient thinkers such as Heraklitos[33] envisaged harmony in terms of equality (Vlastos 1995, 58). Therefore, cosmic equality was absolutely indispensable to cosmic justice. The order of nature is maintained since it is the order of harmonious equals.

The Greek medical thought offers illuminating formulas of 'egalitarian' harmony in nature. The physician Alcmaeon of Croton who lived in the late 7th century B.C. illustrated a rather practical use of this concept when he defined health as follows (fr. B4):

> The bound of health is the equal rights (*isonomia*) of the powers, moist and dry, cold and hot, bitter and sweet, and the rest, while the monarchy of one of them is the cause of disease; for the monarchy of either is destructive … Health is the proportionate admixture of the equalities.

It may be inferred from Alcmaeon's statements that if one power is stronger than the others, it can cause disorder.[34] Its strength, therefore, has to be moderated. If health exists, it can be assumed that the constituent powers are in equilibrium and thus equal to one another. In the early development of cosmological theory, powers are to be equal if they can control each other so that none of them gain mastery or supremacy or in Alcmaeon's words 'monarchy' over the others (Vlastos, 1995, 59). Hence, the purpose of blending or mixing (*krasis*) of equal powers may be to ensure that no individual power prevails.

Anaximandros of Miletos who lived in the early 6th century B.C. was one of the influential early philosophers who discussed the order and constitution of the *cosmos*. He also conceptualized the *cosmos* as a system that is subject to the laws and relations of justice (Raaflaub 2005, 49). One excerpt of his work on nature says (fr. B1):

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[33] To express the concept of harmony, Heraklitos did not say that everything was equal but one (fr. B50: "all things are one"). Beside, to express their equality, he stated that everything was the same (fr. B62: "a thing is one and the same as its opposite").

[34] Vitruvius in his treatise *On Architecture* (1.4.1-8) similarly states that by the changes of the powers in nature, bodies which are in these places will be infected. It is also possible to perceive this from those bodies which are not animal.

> Some other infinite (*apeiron*) nature, from which come into being all the heavens and the worlds in them and the source of coming-to-be for existing things is that into which destruction happens according to necessity; for they render justice and retribution to each other for their injustice according to the ordering of time.

According to Anaximandros' philosophical concept of nature, in the boundless 'infinity' all potential being exists in a perfect mixture and dynamic balance (Raaflaub 2005, 49). Everything that exists is to emerge from that 'infinity' in a balance of opposites. Thus, such balance represents justice and any repression of one by the other causes injustice which is compensated for in the course of time. Hence, it is possible to assume that for Anaximandros too, justice was an affair between equal constituents.

Although Aristotle did not specifically mention Anaximandros' name, he implicitly referred to him when he postulated that 'infinity' surrounded and controlled the opposites to safeguard the balance among them. Concerning this issue, Aristotle (*Physics*, 204b 24-29) states the following:

> Some people make not air or water the infinite, but this (something distinct from the elements) in order that the other elements may not be destroyed by the element which is infinite. They are in opposition to one another –air is cold, water is moist, fire is hot. If one were infinite, the others would have been destroyed by now. As it is, the infinite is something other than the elements, from which they arise.

Apart from ancient philosophy, the conception that the main constituents of the *cosmos* are equals was also an old tradition in poetry. For instance, Homeros implied that the heavens, the sea and the 'dark' underworld were equals because their lords were equals in status. In the *Iliad* (15.184-195) he voiced the answer of Poseidon to Iris who was visiting him to deliver Zeus' message as follows:

> Then, stirred to hot anger, the glorious Shaker of Earth spoke unto her. Out upon it, verily strong though he be he hath spoken overweeningly, if in sooth by force and in mine own despite he will restrain me that am of like honor with himself. For three brothers are we, begotten of Kronos and born of Rhea –Zeus, and myself and the third is Hades that is the lord

> of dead below. And three-fold wise are all things divided, and unto each hath been apportioned his own domain. I verily, when the lots were shaken won for my portion the grey sea to be my habitation for ever, and Hades won the murky darkness, while Zeus won the broad heaven amid the air and the clouds, but the earth and high Olympos remain yet common to us all. Wherefore will I not in any wise walk after the will of Zeus, nay in quiet let him abide in his third portion, how strong so ever he is.

Hesiodos similarly declared in his *Works and Days* (125-128) that the earth and the heavens were equals by saying the following:

> Whom she conceived and bore from union in love with Erebos and earth first bore starry heaven, equal to herself, to cover her on every side.

It seems logical then to infer from ancient philosophy and poetry that the distances between each of the constituents are equal; the distances between the earth, fixed stars, moon and the sun are equal (Vlastos 1995, 76). With the equality of the opposites which constituted the *cosmos*, nature is in a fine harmony where none would dominate the other.

Therefore, these ancient thinkers and writers make it likely that the notion of 'equality' existed before the early 6th century B.C. in ancient Greek thought. However, to clarify 'equality' in nature, *isomoiria* would be a better term which means "equality of partnership" rather than *isonomia* which means "equality of rights." The latter, on the other hand, seems more fitting to the political sphere regarding the *polis* constitution since it implies political equality among the citizens.

To be able to understand the concept of *isonomia*, it would be appropriate to begin with the etymology of the term. The first word in the compound – *iso* – means "equal" in ancient Greek language. The second one – *nomia* – could be either derived from *nemein*, "to distribute" or from *nomos*, "law." Ehrenberg (1964, 51) argues more for the "equality in distribution" since it perfectly fits the roots of egalitarian state in which privileges are shared equally by its citizens. Vlastos (1995, 97-98) on the other hand, believes that the proper meaning of the

term is definitely "equality before law." Therefore, it seems that this term may be taken as the "equal distribution of political power." In other words, it is an "equal share in government." In this respect, Herodotos (3.80.6) named the form of government as *isonomia* which is the rule of multitudes or masses:

> But the rule of the multitude has in the first place the loveliest name of all, equality, and does in the second place none of the things that a monarch does.

At this point, it seems clear that Herodotos identified *isonomia* in the most positive way in contrast to both tyranny and aristocracy. However, this concept was initially confined to aristocracy in the sense of political equality among the nobles in the assembly (Raaflaub 2005, 47). The aristocratic conception of *isonomia* was later expanded to all citizens of the *polis*. In this respect, all citizens' communal responsibility was enhanced by law which gave them a share in political power (Raaflaub 2005, 42). Yet, it is reasonable to raise the question of how this aristocratic 'equality' was transformed into the 'equality' of all citizens including the non-nobles.

The late 7th and 6th centuries B.C. were a period of rapid change when the Greek world witnessed a shift in political power from the nobles to the non-nobles. In many *poleis*, the nobles' exercise of power met with resistance by the non-noble members of the community. The aristocratic rule began to lose much of its solidarity, power and authority (Raaflaub 2005, 38). Consequently, successful non-noble citizens of the *polis* made their influence felt and demanded an equal share in government. Aristotle (*Politics*, 4.1301b 2-10; 4.1301b 26-29) discussed this issue as follows:

> And there are some men who being superior in birth claim unequal rights because of this inequality. These then roughly speaking are the starting points and sources of factions, which gave rise to party strife (and revolutions due to this take place in two ways: sometimes they are in regard to the constitution, and aim at changing from one established to another, for instance from democracy to oligarchy or from oligarchy to democracy…
> For party strife is everywhere due to inequality, where classes that are unequal do not receive a share of power in proportion

> (for a life-long monarchy is an unequal feature when it exists among equals); for generally the motive for factious strife is the desire for equality.

The changing military tactics in the archaic period essentially articulated this shift in political power in society. In earlier times, full citizenship of a *polis* was primarily confined to the nobles who could keep horses in time of war. Later, it was shared by men who could supply their own weapons and armor (Ehrenberg 1964, 48). When the pride of individual noble' independence at war disappeared, a new closed military order of hoplites – *phalanx* – came into existence.[35] The order of *phalanx* was also based on the notion of equality. The distances between each hoplite in this order were equal to one another in a strict geometric scheme (Fig. 33). As the *phalanx* gained decisive success in war and became the primary military tactic of the Greeks, free peasants in society who constituted this hoplite army began to share victory and honor with the nobility. As a result, they demanded a share in the use of political power.

Social strife due to inequality in using political power was experienced by many *poleis* in ancient Greece. Although it was singular and unique by its formation, Athens experienced events similar to many other Greek cities. In Attica, it was social discontent and political distress which caused friction between the people (*demos*) and the noble rulers (Fowler 1966, 129). The unprivileged people at Athens became more and more uncomfortable. Neither the laws of Draco nor the purification by Epimenides sufficed to solve this problem. Aristotle[36] (*Athenian Constitution*, 2.1.-3.) briefly describes the situation of the poor at Athens as follows:

> Afterwards it came about that a party quarrel took place between the nobles and the masses that lasted a long time. For the Athenian constitution was in all respects oligarchic, and in fact the poor themselves also their wives and children were actually in slavery to the rich, and they were called clients (*pelatae*) and sixth-part-tenants (*hektemori*) for they paid for the rich men's land which they farmed, and the whole of the country was in few hands, and if they ever failed to pay their

[35] For a recent view of the so-called hoplite revolution see Krentz (2007, 61-84).

[36] This treatise is actually Pseudo-Aristotle which is commonly attributed to Aristotle himself.

> rents, they themselves and their children were liable to arrest and all borrowing was on the security of the debtor's persons down to the time of Solon; it was he who first became the head of the people. Thus the most grievous and bitter thing in the state of public affairs for the masses was their slavery not but what they were discontented also about everything else, for they found themselves virtually without a share in anything.

It can be inferred from Aristotle's words that the privileged people at Athens became richer and the unprivileged became poorer. Aristotle (*Politics*, 4.1301b) implies that this was a disease of a *polis* that should be cured. In 594 B.C. (the traditional date), it was agreed by both classes that Solon would be elected as *archon* (chief official) and entrusted with power to deal with the existing discontents and to make a new form of government. This extensive power placed him in the position of an arbiter. Plutarch (*Solon*, 1.-2.) writes the following about Solon's assignment as the chief official of the state:

> At this point, the wisest of the Athenians cast their eyes upon Solon. They saw that he was the one man least implicated in the errors of time, that he was neither associated with the rich in their injustice, nor involved in the necessities of the poor. They therefore besought him to come forward publicly and put an end to the prevailing dissensions… however, he was chosen *archon* to succeed Philombrotus, and made mediator and legislator for the crisis, the rich accepting him readily because he was well-to-do and the poor because he was honest. It is also said that a certain utterance of his which was current before his election, to the effect that equality bred no war, pleased both the men of substance and those who had none, the former expecting to have equality based on worth and excellence, the latter on measure and count.

According to Solon, the political discontent affected every citizen in the *polis*. Contrary to Hesiodos' advices in the *Works and Days* to concentrate on the private sphere rather than public sphere, family, farm and good relations with the neighbors, Solon encouraged every citizen to participate in public matters to overcome such crises. In one of his programmatic poems he states (4.26-29):

> Thus the public ruin invades the house of each citizen,
> and the courtyard doors no longer have strength to keep it away,

> but it overleaps the lofty wall, and though a man runs in
> and tries to hide in chamber or closet, it ferrets him out.

Solon particularly blamed the injustice, greed and *hybris* of aristocracy for the existing corruption. After he was appointed as *archon* to resolve the conflict, he distributed much of the land of the rich to the poor (Raaflaub 2005, 40-42). He cancelled all the debts of the poor and restored liberty for those who had been enslaved. In this way, the personal freedom of Athenian citizens and the balance between them was provided. The *ekklesia* or assembly was one of his 'new' institutions; Solon ordered every citizen to come together in assembly to decide on the political affairs and select the officials. Thus, the mass of the citizens had the controlling power so that no individual or group could govern the state according to its own interests (Hammond 1970, 59).

Solon's reforms were basically based on justice (*dike*) among all citizens where none would obtain prevailing power to oppress the other. He focused more on *eunomia*, "good order," rather than *isonomia*. The concept of *eunomia* or good order was later modified by *isonomia* or equality. Nevertheless, both were built on the notions of 'order' and 'harmony.' Some direct references of these notions may also be traced in the man-built environment.

3.2.1. Olynthos: "Egalitarian" Housing Plan

In his masterpiece *Politics* (1253b) Aristotle aptly states that "every *polis* is composed of households." In terms of classical archaeology, many modern scholars like Nicholas Cahill have asserted that the study of the Greek *polis* in its both physical and social connotations begins with the study of the Greek house. Therefore, in examining the relationships between town planning and the community, together with the *agorai*, the sanctuaries and any other public or sacred buildings of a city, we must also analyze the arrangement of house blocks since they represent the physical units of civic organization and social units as well. In this regard, the city of Olynthos provides a fuller and richer picture of the Greek organization of residential blocks than almost any other Greek town (Fig. 38).

Olynthos, well drained and abundantly supplied with water, was situated between the western and central fingers of the Chalcidic peninsula (namely Pallene and Sithonia) in northern Greece, about 2.5 km inland from the sea (Fig. 34). The city was built on two flat-topped hills rising 30 to 40m above the surrounding plain.

The original settlement before the 5th century B.C. was located on the 'South Hill.' Indeed, a small settlement existed here already in the Neolithic period. However, no Bronze Age remains have been discovered in the area so far (Cahill 2002, 34). The South Hill was settled in an irregular fashion with clusters of rooms (probably shops) opening to a simple network of streets. Two streets have been uncovered running roughly in a north-south direction all along the east and west sides of the hill. Two other cross-streets have also been excavated running east-west. A public area has been discovered on the northern part of the hill dating to the 5th century B.C which is poorly preserved with no *stoas* or remains of other large buildings. A second public area has also been found to the south of the hill which the excavator Robinson called the "Civic Center."[37] This included a large building, probably an assembly hall, built largely of reused ashlar stones in the fifth century.

The history of Olynthos before the Persian wars is not clear. However, according to Herodotos (8.127), the city was inhabited by the Bottiaeans, a local tribe who had been driven here by the Macedonians. During the Persian retreat from Greece in 479 B.C., Artabazus, a Persian commander, besieged and captured Olynthos. Suspecting that the Bottiaeans would revolt from his king, he slaughtered them and gave their city to the Chalcidians. After 479 B.C., there must have been more immigration into Olynthos from the nearby Chalcidic lands. Nevertheless, the city remained a relatively small settlement until 432 B.C.[38]

On the eve of the Peloponnesian War in 432 B.C., Perdiccas, the Macedonian king, persuaded a number of Chalcidic cities to move inland and form a single fortified city at Olynthos. Thucydides (*History of the Peloponnesian War*, 1.58.) narrates the story as follows:

[37] See Robinson (1932).

[38] The archaeological remains form this period primarily come form the South Hill indicating that at this time the South Hill was still the main inhabitation area. For more information on the archaeological evidence at the site see Cahill (2002).

> Receiving from the Lacedaemonian government a promise to invade Attica, if the Athenians should attack Potidaea, the Potidaeans, thus favored by the moment, at last entered into league with the Chalcidians and Bottiaeans, and revolted. And Periccas induced the Chalcidians to abandon and demolish their own towns on the seaboard, and settling inland at Olynthos, to make that one city a strong place; meanwhile to those who followed his advice he gave a part of his territory in Mygdonia around Lake Bolbe as a place of abode while the war against the Athenians should last. They accordingly demolished their towns, removed inland, and prepared for war.

This "moving inland" (*anoikismos*) was the primary impetus behind the expansion of the old town on the South Hill onto the broad, flat-topped hill to the north, namely the 'North Hill' (Cahill 2002, 38). This new area was laid out according to an orthogonal grid system. The streets in this part of the city were oriented in nearly straight lines along the north-south and east-west axes in the late 5th century B.C. The north-south arteries have been labeled as "avenues" and the east-west arteries as "streets" by the excavators.

There is no evidence that the North Hill was ever occupied before the reign of Perdiccas. The new settlement here consisted of rectangular house blocks, *insuale*, and a 'public zone' to the southwest end of the hill (Fig. 35). The public area of the 'north city' included an open courtyard free of buildings measuring 137 x 85m. Three public buildings surrounded the courtyard on its north side and the northeast corner. On the north, facing the square stood a poorly preserved stoa-like building. At the northeast corner was another stoa-like building with a central colonnade. A fountain house was situated to the south of this structure. Many scholars have suggested that this square was probably the *agora* of the city. On the other hand, Robinson and Graham have claimed that the area was used as an open space for military purposes while Hoepfner and Schwandner have argued that it was a sanctuary. However, there is no satisfactory archaeological evidence to support such assumptions.[39]

[39] Nicholas Cahill prefers to identify this area as the *agora* of the city. See Cahill (2002, 265-266).

Houses on the North Hill were mostly organized in blocks of ten, composed of two rows of five houses separated by a narrow alley (Cahill 2002, 27). These rectangular housing blocks (*insulae*) were essentially identical measuring approximately 86 x 35m (Figs. 36 and 37). However, to the east side of the city, they were slightly shortened to allow the streets to follow the natural topography of the hill.

Houses at Olynthos were largely built according to the "pastas" type, a design of house which was widespread particularly in the Classical times (Cahill 2002, 75). The 'typical' house plot at Olynthos was roughly square measuring approximately 17m at each side (Fig. 39). Two main axes crossed the house from east to west. The axis near the middle of the house separated it into two almost equal parts. The first part of the house included more 'public' spaces; the main gateway, the courtyard paved with cobbles or pebbles[40], a large room opening to the street (identified as a shop), the anteroom and the *andron*. The other part was divided into two portions by the second axis. It possessed the "pastas," a long portico opening to the courtyard and providing a space sheltered from sun or rain, the main suites of rooms and services.

A great number of houses at Olynthos share some or all of the organizing principles with the aforementioned 'typical' house plan. This general similarity among the Olynthian houses has led many scholars to the conclusion that ignoring the variety, most houses in the city can be comprehended with reference to the principles and components of the 'type' (Cahill 2002, 194). In this respect, Hoepfner and Schwandner (1986, 82-89) have asserted that in their original arrangement, all houses at Olynthos were planned essentially identical, varying slightly according to the chronology, some environmental factors and the position of houses in the block. Accordingly, the houses must have looked almost like rows of identical and 'prefabricated' dwellings. Furthermore, they have proposed that not only were the citizens of Olynthos allotted identical house plots but also required by the *polis* to build their houses according to one standardized plan. Therefore, the 'type' house itself within the identical *insulae* becomes "the symbol

[40] Most houses at Olynthos seem to have been centered around this open courtyard. This arrangement was so common in the ancient Mediterranean.

of the material expression of the Greek political idea of *isonomia*, the equality before the law."[41]

Olynthos became the capital of the Chalcidic League and prospered in the late 5th or early 4th century B.C. However, the city was destroyed by Philip II, the king of Macedonia, in 348 B.C. According to some scholars the regular planning of the city has revealed clear connections between cultural ideals such as *isonomia* and architectural form.[42]

3.3. Colonization: The Expansion of the Greek World

The Greek world witnessed an extensive colonization movement between the 8th and the 6th centuries B.C. which took them to almost every corner of the Mediterranean region and beyond. This archaic colonization process can be distinguished from other migrations in Greek history by its scale and extent. Plato (*Phaedo*, 58. 109) implied the outgrowth of this intensive colonization movement as follows:

> I believe that the earth is very vast, and we who dwell in the region extending from the river Phasis to the Pillars of Heracles along the borders of the sea, are just like ants or frogs about a marsh.

Several scholars posit that a great number of Greek colonies founded in this era carried urban life to most of the Mediterranean coastline and even further, and brought Greeks into contact with a variety of people, both "civilized" and "uncivilized," and a plethora of landscapes at the same time.

Itinerancy and migration actually were not new concepts for the Greeks. In fact, myths of wandering reflect an interest in geography, exploration, navigation, piracy, trade and colonization in the *ethos* of the society. Furthermore, the adventures of wandering deities and heroes were told and re-told repeatedly among

[41] However, Cahill (2002, 221-222) disagrees and claims that no such 'type' house ever existed at Olynthos. According to him, although most domestic spaces showed a clear similarity, they were used for different functions in different contexts. Thus, *isonomia* among citizens did not make Greek houses all exactly alike.

[42] For more discussion see Hoepfner and Schwander (1986).

the members of the community and thus contributed much to their collective consciousness.

Mythical geography appears early in the Homeric hymns and the fragments attributed to Hesiodos. In this respect, it is possible to observe in the literary evidence that the gods and goddesses often travel for divine purposes. For instance, Demeter is represented as a desperate itinerant in her search for Persephone. On several occasions, Zeus and Poseidon visit Ethiopians as Apollo feats with Hyperboreans on the extreme limits of geography. Similarly, almost all deities make regular journeys to their own cult places.

Heroic travels are equally purposeful. For example, Homeros tells us about the adventures of Odysseus during his journey to his homeland, Ithaca after the Trojan War. In his poem he narrates some interesting encounters of Odysseus and his companions with the natives. Those encounters are both friendly and hostile in character. For instance, deceived by the eye-catching, beautiful floral features of the island and its harbor with a good spring, Odysseus disembarks on the lands of the Cyclopes, the wild cannibals with one eye on their foreheads. The poet (*Odyssey*, 9.131-141) notes the potential of the island for a *polis* as:

> In fact, the land is not poor; it could yield fruit in season; soft, well-watered meadows lie along the gray sea's shores; unfailing vines could flourish; it has level land for plowing, and every season would provide fat harvest because the undersoil is black indeed. The harbor has safe landings: there is no need for mooring-tackle for or for anchoring or tying cables hard and fast to shore; once he has beached, a sailor stays until he decides it is time to go, to fair winds offshore. At harbor head there flows clear water from a spring within a grotto; around it poplars grow.

The Cyclopes, however, did not take advantage of this opportunity. In his poem, Homeros (*Odyssey*, 9.103-115) describes these wild native inhabitants of the island as:

> At last our ship approached the Cyclopes' coast. That race is arrogant. They have no laws; and trusting in the never-dying gods, their hands plant nothing and they ply no plows. The Cyclopes do not need to sow their seeds; for them all things, untouched, spring up: from wheat to barley and vines that

> yield fine wine. The rain Zeus sends attends to all their crops. Nor do they meet in council, those Cyclopes, nor hand down laws; they live on mountaintops, in deep caves, each one rules his wife and children, and every family ignores its neighbors.

Thus, it is clear that the Cyclopes are shown as cave dwellers and "uncivilized" monsters since they have no assemblies, laws and institutions and they do not till the land for agriculture. In every respect it is the extreme opposite of normal human society and the structure of a *polis* (Raaflaub 2005, 25).

In strong contrast, the Phaeacians, who originally settled in the vicinity of the Cyclopes' island and then migrated, founded their new city on Scheria. According to Homeros (*Odyssey*, 6.4-10), this represents an ideal *polis* as the inhabitants respect the gods and share the communal experience:

> But there they faced a domineering race, the Cyclopes, at their borders, to escape such neighbors the Phaeacians sailed away. Led by godlike Nausithous, they found an island far from all whose life is toil; and there they settled –on the Scheria shores. About the city, he had built a wall, and he constructed homes, and for the gods built shrines and gave each man his share of land.

Besides Odysseus' travels, Greek myth makes elaborate use of Io's journey which covers one of the widest chronology and geography. According to the tale, Io is abducted by the Phoenicians and taken from Argos to Egypt. Herodotos (*The History*, 1.1.2-1.1.4.) narrates Io's abduction in his inspiring history book as follows:

> Argos, at that time was the leader in all respects of all those in the country now called Greece. Indeed, having arrived at this Argos, the Phoenicians set out their cargo for sale. On the fifth or sixth day after they arrived, when they had sold off almost all of their things, many other women and especially the daughter of the king came to the sea. Her name was, and the Greeks agree on this, Io, the daughter of Inachos. These women standing by the stern of the ship bought some of the wares that were most to their liking, and the Phoenicians encouraging one another rushed against them. Indeed, most of the women escaped but Io was abducted together with others. They (the Phoenicians) having thrown the women on board vanished sailing away to Egypt.

Suffering with terror, Io sets off on a series of wanderings which take her to the far north and east, and finally she arrives at Egypt. Io and her descendants establish a colony –Kanobos –in the lands of Nilotis. The story tells that she gives birth to Epaphos who eventually became the first ruler of Egypt.

According to Davison, the journeys take place in areas surely known to be inhabited, yet in a mythic period, a period before the rise of any known civilizations. She holds that the basic function of these myths is to explain the actual origin of the civilizations. Deities and heroes themselves played a part in the divine ancestry of peripheral civilizations. But a great majority of them once settled in the Mainland and consequently the geographical and conceptual center of the world is the Greek land.

Hartog (1988, 224-269) interestingly states that the Greek myths of wandering make use of exotic places and peoples as a representation of the "others," and by comparison and contrast as a manifestation of Greek identity. In this respect, myth depicts Egyptians as "civilized," permanent and well-known people. On the other hand, the Cimmerians, Scythians and Amazons are presented as nomadic and "barbarous." Yet, all these peoples are still the "other," in other words "not Greeks." Thus, it can be said that the wanderings of Io, Odysseus and even Heracles reinforced the Greek sense of their own identity. In this respect, Davison proposes that the geographic limits in these wandering tales serve only as a device by which the Greeks identified their centrality in the Mediterranean region.

Indeed, there is substantial material evidence that the sailing routes and networks in the Mediterranean had already been established by their predecessors, the Minoans and the Mycenaeans, for the archaic voyagers to experience some similar journeys to their mythical heroes and heroines.

The Minoans lived from the last centuries of the third millennium B.C. to the middle of the 15th century B.C. in Crete. The island with its fertile lands and vast forests may have been able to feed several settlements. But the political

organization of these settlements remains uncertain.[43] Nevertheless, it is possible to say that the Minoans were not ruled by an absolute central authority. The archaeological evidence shows that there were independent families with their own barns and storehouses.

The Minoan economy was mainly based on agricultural production and the exchange of its surplus with precious stones and metals.[44] The trading networks with remote countries were established through shipping. Around the 16th century B.C. the Minoans were trading with the Cyclades islands of the Aegean, Egypt, the coasts of Syria and Palestine in the Levant (Freeman 1996, 76-79). The wall-paintings found on the walls of the palace in Knossos obviously depict the Egyptians presenting gifts to the court in procession. In return, a fresco depicting some elegant youths jumping over a bull was found in Tell al-Dab in the Nile Delta which indicates a certain interaction between the Minoans and the "East."[45]

Besides the Minoans, the Mycenaeans, too, began to develop a trading network along the eastern Mediterranean from the 15th century B.C. onwards. Similarly, Mycenaean pottery is well attested in Egypt and the Levant. The influence of Mycenaean art forms on the Egypt of Akhenaten and his successors suggests an apparent interrelation (Boardman 1999, 23). Furthermore, due to the discovery of a papyrus document in Tell al-Amarna, it is proposed that the Mycenaean warriors were hired by Egyptian pharaoh and fought for Egypt against Hyksos invaders (Freeman 1996, 98).

However, these early expeditions were not to be the only contacts with the "East" during Greek history. As stated earlier, it is well possible that the old sailing routes survived or were rediscovered by archaic sailors. By using these routes, the Greeks managed to reach the eastern coasts of the Mediterranean and founded settlements there.

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[43] Some scholars studying the Minoan culture have assumed that there were powerful ruling kings. Yet, the inscriptions indicate that such an organization belongs to a relatively later period. Therefore, the society was constituted of several clans and big families in that period.

[44] From the ancient records, it is understood that the surplus of agricultural production was carefully listed and stored for the exchange.

[45] The archaeological evidence suggests that the depiction of youths jumping over a bull was a common and popular scene on vase paintings and frescoes in Minoan culture.

According to Braudel (2001, 216), Al-Mina stood "high" on the scale of civilization. For the Greeks too, it was a high point linking the people of ancient eastern civilization with the Greeks. This important trading post was located at the mouth of the Orontes River and founded in the middle of the 8th century B.C. The city played a significant part in the orientalizing phase[46] of Greek art as it provided access for the Greeks to Syria, Palestine, Assyria and all caravan routes of the continental Middle East.

Al-Mina served as a port and depot for sea-going vessels through much of its history. It appears that the finds at Al-Mina are largely pottery (Boardman 1999, 40). In fact, the city was not wholly a Greek settlement. Due to archaeological evidence, it is obvious that the Greeks began to visit the city and established a small community by the 7th century B.C. Most of the population actually consisted of the Phoenicians. Thus, it is not surprising that the city is commonly regarded as an important point where the Greeks met the eastern traditions. For example, it was most probably here that the Greeks became acquainted with the Phoenician alphabet.

Secondly, Naukratis in Egypt enjoyed a significant position in ancient Greek history. Herodotos (*The History*, 2.178) emphasizes the importance of Naukratis as the Pharaohs first allowed foreigners to settle permanently in Egypt. The Greeks were permitted to establish their own settlement and sanctuaries in Naukratis (Fig. 40). Herodotos states the following:

> Amasis was a great lover of the Greeks, which he showed in various ways, including the grant of Naukratis, a city to live in to certain of the Greeks who came to Egypt. To those of them who did not want to settle there but who made voyages to Egypt, he gave lands where they might set up altars and sanctuaries to their gods.

However, Naukratis was not entirely an independent Greek *polis* with its own citizens.[47] Rather, the organization of the city was a work of other Greek

[46] Oswyn Murray first used the term "Orientalizing Period" in 1980.

[47] However, by the Ptolemaic period, Naukratis had the status of an autonomous *polis* with its own laws and citizenship. See Bowden (1996, 30).

poleis and the Egyptian pharaoh. Thus, its survival depended on the continuation of the favor and interest of the Egyptian king and the Greek states trading there (Boardman 1999, 130).

The Egyptian king Psammetichos I (663-609 B.C.) attracted many Greek merchants to Egypt. Indeed, he wanted to obtain the assistance of the Greek mercenaries against Nubian and Assyrian incursions.[48] Thus, the initial settlement of Naukratis actually appears to be a military camp (*stratopedon*). Yet, according to the material evidence discovered in Naukratis, the settlement was soon transformed from a military camp (*stratopedon*) to a trading post (*emporion*) by the end of the 7th century B.C.[49] Herodotos (*The History*, 2.179) mentions the dominant character of Naukratis as a port in Egypt as follows:

> In the old days Naukratis was the only port; there was no other in Egypt. If anyone sailed into any other of the mouths of the Nile, he must take an oath that he had come there unintentionally and having so disavowed, on oath, he must then sail in the same ship to the Canopic Mouth, or if, thanks to contrary winds, he was unable so to sail, he must carry the freight in barges around the Delta until he came to Naukratis. Such preeminence in honor had Naukratis.

According to the tradition, the city was built by Milesians. Yet, they did not act alone. In fact, there were only three groups living in Naukratis, namely Ionians, Milesians and Carians during the reign of Psammetichos I (Coulson 1996, 186). However, almost all Greek trade activities were concentrated in the 6th century B.C. when Amasis (570-526 B.C.) was the ruler of Egypt.

Although it is difficult to discuss how far the "East" played a role in inspiring new ideas to the Greeks concerning artistic, religious, literary and scientific matters, it is still possible to observe eastern influences on some of the Greek achievements. In this regard, for Herodotos, in the representations of myth and religion there are certainly borrowings from Egypt. Moreover, many historians argue that by the 7th century B.C. Greek architects were inspired by Egyptian style

[48] According to the ancient sources, the Greeks worked as hired soldiers for the Egyptian army. For more information see Coulson (1996).

[49] Literary and archaeological evidence do not provide an exact date of the foundation of Naukratis.

and adapted it to their traditional architectural forms and techniques.[50] Besides, far-reaching experiences and travels to the "East" stimulated the Greek spirit of inquiry. For example, the earliest of the Greek philosophers, Thales, who was reputed to be half Phoenician, developed his theories on astronomy and geometry from earlier Babylonian and Egyptian models (Grant 1988, 76). Most strikingly, Thales' theory of the earth floating on the water has many parallels in the Egyptian myth of Nun, and the idea of its formation from water may have come from the silting of the Nile.

Although the colonization movement is apparently a response to external opportunities such as wealth and prosperity in splendid remote countries, some historians maintain that its primary incentive certainly comes from serious internal pressures and economic constraints such as poverty and famine which severely struck the Greek people in this period (Murray 1993, 108). The ancient Greeks made their livings in various ways. In this regard, Aristotle (*Politics*, 1.1256a) conveys the ways of living of man as follows:

> But as there are many sorts of provision, so are the methods of living both of man and the brute creation very various; and it is impossible to live without food… men's lives differ greatly from each other, and of all these the shepherd's is the idlest, for they live upon the flesh of tame animals, without any trouble… others live exercising violence over living creatures; and those who live near lakes and marshes and rivers, or the sea itself, on fishing; but the greater part of mankind live upon the produce of the earth and its cultivated fruits.

Like Aristotle, many scholars point out that the basic way of living in ancient Greek land was agriculture. Yet, Greece was, indeed, a relatively poor agricultural country with very little and limited arable land. Furthermore, estates were inherited by the sons of the owners in allotments which were insufficient to support a family. The peasants, on the other hand, had to hand over five-sixths of their annual agricultural product to landowners (Braudel 2001, 213). From the number of graves discovered in Attica, it is assumed that the population had considerably increased by the middle of the 8th century B.C. in almost every part of Greece to the

[50] For further discussion see Coulton (1977).

point of outrunning local food supply (Snodgrass 1980, 22). Thus, the lack of sufficient cultivated land for agriculture appeared to be a devastating problem in Archaic times. At this point, the search for new fertile lands seemed to be an inevitable solution. This colonization process was slow in early years. Some states even chose to exploit nearby lands for food supply. For example, the Spartans invaded the lands of their neighbors, Messenia to exploit its grain resources. Fernand Braudel (2001, 217) regards this type of exploitation as "internal colonization." But, eventually, many Greek *poleis* began to practice overseas colonial expansion by the 8th century B.C.

The foundation of these colonies (*apoikia*) was organized by independent Greek *poleis*. It was never a product of the great imperial policies to conquer and exploit exotic lands. On the contrary, the Greek settlers conceived these settlements as their new home. The decision to send out colonists was sometimes taken by an individual group as a private venture. This was usually led by the members of a defeated party and exiles after a civic strife. Yet, the majority of colonies were established as public ventures decided by the assembly. We obtain illuminating information about the nature of the foundations from a small number of inscriptions preserved. For example, the foundation decree of the colony at Cyrene by the Therans discovered in ancient historical documents runs as follows:[51]

> The assembly decided: since Apollo spontaneously ordered Battos and the Therans to colonize Cyrene, the Therans resolve to send out Battos to Libya as leader and king, with Therans to sail as his companions. They are to sail on fair and equal terms, according to households, one son to be chosen of those who are in the prime of life; and of the rest of the Therans those free men may sail. If colonists establish the settlement, any of their fellow citizens who sail later to Libya is to share in citizenship and honor, and to be allotted unoccupied land.

Hence, it can be inferred from the text that the act of colonization was conducted by an aristocratic leader (*oikistes*) designated by the assembly in the mother city. He was the one who organized and commanded the settlers, and as

[51] The quotation is from Murray (1993, 114-115); *Greek Historical Inscriptions* no. 5.

Homeros notes in the passage about the Phaeacians quoted above, planned the layout of the city, distributed the land among the 'equal' citizens and established the legal, political and religious institutions of the new colony. After his death, he was declared a hero, thus becoming a semi-god with several religious cults dedicated to him.

It must be noted here that the oracular institution played an extremely important role in establishing a new colony in this period.[52] As stated clearly in the foundation decree of Cyrene, the first task of the *oikistes* and the colonists was to consult the oracle and obtain the consent of the gods. Indeed, founding a new city was basically considered as a religious act. Consequently, without the approval of the gods, it was considered as a serious crime to take the possession of foreign lands.

After its foundation, the new settlement itself was completely an autonomous Greek *polis* with its own laws and institutions independent from its mother city (*metropolis*). Yet, there are certain religious and political bonds between the colony and the mother city. First of all, the relationship was fundamentally based on shared cults, ancestors and language. In this respect, the first settlers of the newly founded city carried the sacred fire from the hearth of its mother city all along the journey and started the colony's own hearth with it. In this way, this sacred fire representing the continuing life in the colony reinforces the idea that this new settlement was a continuation of its mother city. In addition, every citizen had the right to exercise citizenship in both *poleis*. For example, archaeological evidence suggests that a citizen of either the colony or the mother city could make religious offerings at the festivals in one of these cities.

In political terms, too, the colony and its mother city were considered to be natural allies. It is common that they gave each other military or diplomatic support in wars, and conversely, any struggle between them was regarded to be 'shameful.'

It is rather difficult to draw a clear picture of the nature of interrelations between the Greeks in new colonies and their neighbors due to the scarcity in

[52] On the contrary, some scholars argue that the foundation oracles were actually reconstructed oracles of a later period. In fact, by the Classical era, Apollo was known to be the god of the colonists. His oracular center at Delphi was attributed to be responsible for the foundation of many Greek colonies.

sufficient and satisfactory archaeological evidence. Yet, it may still be stated that many Greek colonists tried to establish collaboration with the natives. In fact, the Greeks were quite opportunistic in this respect and ready to set cooperation with the natives. It appears that in cities which they cooperated with the locals, the Greeks did not consider an overall territorial defense and sometimes they did not even provide strong fortifications.

On his account of the Ionian colonization of Miletos, Herodotos (*The History*, 1.146) states that the Greek colonists were mainly constituted of unmarried men at fighting age. According to Murray (1993, 111), marriage with the native women was permitted among the Greeks until the colony was well-established. Both the archaeological and literary evidence seem to support this assumption. For instance, the material evidence clearly indicates that the colonists at Cyrene married Libyan women. Yet, most probably intermarriage began to be discouraged or even prohibited afterwards.

To recapitulate, colonies were newly founded communities. Colonists left their homeland for various reasons, including the search of freedom from economic misery and its political implications. According to Raaflaub (2007, 44), colonization provided a powerful motivation to establish "egalitarian" political and social structure. All colonists started from the beginning, on the same level with the others or "on fair and equal terms." In colonies, the equal distribution of lands for private houses of the citizens is to be reflected in the overall layout of the settlement in principle. This experience had definite impacts on "egalitarian" thinking and contributed much to the formation of the Greek *polis*.

3.3.1. Megara Hyblaea: City Planning of a Greek Colony

Megara Hyblaea is one of the best known ancient sites in Sicily serving as a salient example for an understanding of the town planning of a western Greek colony (Fig. 41). Archaeological investigations conducted here have revealed some important physical characteristics of Greek colonies in detail. In this respect, we know for certain that regular planning with a strictly geometrical layout was implemented in the Sicilian Greek colonies as early as the 7th century B.C. (Fig. 44).

There are also indications that urban development followed the lines drawn in the 8th century B.C. by the original colonists (Ward-Perkins 1974, 24).

According to ancient sources, the colony was founded by the Megarians, the neighbors of the Corinthians north of the Isthmus of Corinth in mainland Greece, shortly after the colonists from Chalcis founded Naxos. The founder or the *oikistes* of this Megarian colonial enterprise was Lamis.[53] Thucydides (6.4) states that the foundation of Megara Hyblaea took place 245 years before its destruction, that is to say, around 730 B.C. Archaeological evidence also confirms the establishment of the city in the second half of the 8th century B.C. in an area not previously occupied (Danner 1997, 145). The choice of location for the settlement seems to have been determined by the colony's general function which was essentially agricultural. The city was situated on a slightly raised plateau, on the landward side of the Bay of Augusta, exploiting Sicily's flat lands with good water supply and rivers close by. It was surrounded by the river Cantera on the north, the river San Cusmano on the west and south, and by the sea on the east (Fig. 42). However, the Megarian colonists did not first settle on this land, but on the land to the northern edge of the Augusta peninsula. Here they joined Leontini, the new Chalcidian colony. Yet, the two groups within the town quarreled and the Megarians moved once again, this time to the old Bronze Age site of Thapsos, on the promontory projecting into the southern end of the Bay of Augusta. Paolo Orsi has suggested that the founder Lamis died here.[54] Only later, the Sicel king, Hyblon, allowed the Megarians to establish their colony in his territory, where their city was eventually to be situated (Di Vita 1996, 266).

[53] Indeed, Megara Hyblaea was formed by the *synoikism* of five tribes or villages in the homeland. The main goal of the *oikistes* Lamis was to create a certain 'cohesion' among the different kin groups who followed him in the conquest not only new lands but also new communal identity (Di Vita 1996, 267).

[54] The excavator P. Orsi found a Bronze Age chamber tomb reused in the 8th century B.C. for a burial accompanied by a Late Geometric Corinthian cup. According to him, this indicates the Megarian presence at Thapsos and the chamber is likely to have belonged to Lamis. See Holloway (1991, 49-50).

Peter Danner (1997, 157-158) asserts that the urban development of Megara Hyblaea took place in three phases.[55] The first phase was, naturally, the choice of the site and foundation of the colony which did not last longer than one generation. In this phase, there were very few residents living in buildings constructed of perishable materials. The arrangement of the houses was not probably regular. After the foundation, the second phase of the 'urbanization' of Megara Hyblaea followed in the second half of the 8th century. In this period, the settlement was segregated into private and public zones for civic and religious purposes. The land was allotted among the settlers and the location of cemeteries was chosen in the vicinity. Nevertheless, the town had a rural character rather than an urban one having regular as well as irregular components apparently in conformity with the topography of the site. The third and the last phase was certainly the most important step in the development of the colony. In this phase, the final layout of the city was shaped with the division of the zones into *insulae*, the completion of the road network, the construction of monumental public buildings and sanctuaries. After this phase, the city acquired a conspicuous geometric pattern with regular lines albeit in skewed orientations.

Archaeological exploration has shown that at the end of the 8th century B.C. almost the whole north plateau between the later city-walls and the sea was inhabited.[56] Thus, the studies are centered here where the *agora* of the city was also situated.[57]

The streets running in the north-south direction were laid out shortly after the land division of the city had been made. Almost all streets in this direction had the width of approximately 3m, with one exception; the main street bordering the *agora* to the west which is labeled as 'C1' by the excavators was 5.8m (Fig. 43). The

[55] We must note here that the initial 'urbanization' process was relatively faster in the colony which was probably completed three or four generations after.

[56] Due to the limited excavations conducted on the south plateau, we do not know much about the layout of the city in this area. Nevertheless, although no traces of architectural structures have been found in the southern part, there is a large quantity of pottery discovered here dating to the 8th century. See Danner (1997).

[57] Since the Second World War, the French archaeologists have been excavating Megara Hyblaea. Until recently, the team leaders were G. Vallet, F. Villard and P. Auberson who published *Megara Hyblaea* in French in 1983.

north-south streets were crossed by two large streets running in the east-west direction. The first one to the south which is labeled as 'B' also had the width of 5.8m. The second one to the north which is labeled as 'A' had the width of 5.3m but it was widened to 6m where it bordered the *stoa* along the north side of the *agora* (Holloway 1991, 52).

The north-south streets had obviously two conflicting axes. The orientation of the streets to the west of 'C1' differs about twenty one degrees from that of the streets to the east of 'C1' (Danner 1997, 146). In addition to the north-south streets, the cross streets in east-west orientation (namely 'A' and 'B'), albeit parallel at the west end of the excavated area, change direction slightly at the *agora* and begin to converge as they pass the east blocks towards the harbor. Therefore, the resulting street plan was obviously asymmetrical in configuration. According to Holloway, the two parts (that is, the west of 'C1' and the east of 'C1') could not have been built exactly in the same period. Accordingly, the alignment of the two eighth century houses with the western streets indicates that originally the western orientation prevailed in this area. Thus, the eastern orientation, which produced the trapezoidal *insulae* to the east of the *agora*, was a later development.[58] That is to say, the original city plan was executed in the west up to the 'mid point of *agora*' according to a fully orthogonal scheme. Then, the system was extended eastwards with a different orientation. This new system seems to explain also the skewed orientations of the two avenues 'A' and 'B.'[59]

Owing to the asymmetry of the street plan, the length of the residential blocks, *insulae*, varied from 100m to 116m. The *insulae* were approximately 25m wide and separated lengthwise into two allotments. According to Di Vita (1996, 267), the houses, uniformly aligned with each other, were of an 'ideal egalitarian'

[58] On the contrary, however, Antonino Di Vita (1996) posits that the Megarian colonists envisaged a 'multiple' grid system from the very beginning.

[59] Some scholars have attempted to relate these different orientations with the *synoikism* of the five villages. In other words, the orientations were related to the arrangement of five quarters at the site. However, it seems too speculative to arrive at such a conclusion. In brief, whether the two conflicting axes are due to social or formal factors has not been understood yet. For more discussion see Holloway (1991) and Danner (1997).

design all possessing almost identical land plots.[60] Each settler had an allotment of 100 to 120 square meters. In the 8th century, houses were of the 'simplest' kind with a single room built at the center of the allotments around the *agora*. They had a square or rectangular outline covering an area of 15 to 20 square meters. In the 7th century B.C., a second or often a third room was added (Danner 1997, 146-149). In addition to these 'simple' dwellings, a more elaborate type of house with a courtyard and a portico in front of the ground floor suites has been found. This organization resembles the so-called 'pastas' house which was typical of Greek domestic architecture (Holloway 1991, 53).

Bordered by the streets 'A' to the north, 'B' to the south and 'C1' to the west, an irregular quadrangular open space was reserved for the *agora* from the 'first day' of the settlement. During the 8th century B.C. no building was erected in the *agora*. However, in the 7th century B.C., the public buildings of the city were constructed here. In the second half of the 7th century B.C., the *agora* was enclosed by two *stoas* on its north and east sides. In the middle of the square, the foundations of two 'temples' have been discovered. Although one had a porch in the front, none had a surrounding colonnade (*peristyle*). These are identified as the shrines (or *heroon*) dedicated to the founders, Lamis and his successor. Another structure with similar proportions to the north and two small circular structures in the second block to the west of the *agora* bearing some religious significance have also been uncovered. Also to the west of the *agora* a building has been found consisting of a courtyard and three dining rooms behind a colonnade. It has been suggested that this would have been the dining hall for the public officials. Moreover, in the second half of the 6th century B.C. the *prytaneion* was added (Holloway 1991, 53; Danner 1997, 149).

Presumably standing outside the grid system of the city, two sanctuaries at the west and northeast ends of the north plateau have been identified. Another sanctuary has also been discovered on the east edge of the south plateau. Moreover, the cemeteries were situated outside the inhabited area along the streets leading to the north, west and south.

[60] Due to the irregular layout of the residential blocks, *insulae*, we cannot expect to see really an equal possession of the land. However, we may still assume that the land had to be divided 'equally' in ideal.

In the course of time, Syracuse to the south became a dangerous neighbor for Megara Hyblaea. Eventually, the city was destroyed by Gelon, the tyrant of Syracuse, around 483 B.C. Although it was reoccupied later, it never again gained any importance.

To conclude, we may safely state that many settlements in mainland Greece such as Megara, the mother city, the *metropolis* of Megara Hyblaea grew continuously showing no indications of a geometric arrangement. Indeed, in the period of the foundation of Megara Hyblaea, there was almost no regularly planned settlement in the mainland. In these settlements there was no clear division between the public and private zones. In a sense, these settlements were somewhat a continuation of the pre-existing towns from the Bronze Age. On the contrary, the colony allowed the whole site to be deliberately planned from the very beginning. The colonists felt no environmental pressures of prior occupancy and use to execute their 'egalitarian' ideals. In this respect, they obviously made use of geometric principles to 'harmoniously' arrange their new urban areas which were segregated carefully according to the variety of functions.

CHAPTER 4

QUESTIONS OF ORIGINS: PHILOSOPHY AND THE GRID

> "The mathematical sciences particularly exhibit order, symmetry, and limitation; and these are the greatest forms of the beautiful."
>
> Aristotle (*Metaphysics*, 1078b)

4.1. The Ionian Renaissance: The Birth of Natural Philosophy

Ionia seems to occupy the key position for a better understanding of the intellectual growth in the ancient Greek world since it has been conventionally accepted by many modern scholars that the history of Western philosophy began with the Ionian natural theorists of the 6th century B.C. However, there is still an ongoing discussion among the historians pertaining to the Ionians' cultural and ethnical identity and origins.[61] The material evidence of pottery, although limited and controversial, suggests that the Ionians began to settle on the Cycladic islands and along the western coasts of Asia Minor by the end of the 12th century B.C. Yet, there is still much to learn about the early Ionian migrants and the time during which the migration movements continued. Strabo (14.1.2.) gives an account of Ionia's geographical extent as follows:

> The coasting voyage round Ionia is about 3430 stadia, this distance being so great because of the gulfs and the fact that the country forms a peninsula of unusual extent … be that as it may, the bounds of the Ionian coast extend from the Poseidium of the Milesians, and from the Carian frontiers, as far as Phocaea and the Hermus River, which latter is the limit of the Ionian seaboard.

[61] It has been suggested that following the collapse of Mycenaean age, the descendants of Nestor at Pylos migrated first from Peloponnesos to Attica, and then from Attica to the Cycladic islands and to the western coast of Asia Minor. In this respects, the Ionians of Euboea and the Cyclades were considered to be the pioneers of the Ionian migration. For more information concerning the earliest account of the Ionian migration see Strabo (14.1.3.) and Pausanias (7.2.1.).

Although the intellectual developments were not merely the symptoms of economical and sociopolitical transformations in Ionia, it must still be stressed that there was an intimate link between them. With the growth of trade, the Ionian cities were able to rely on the imported grain and began to focus on the more specialized industry (Cook 1962, 94). As the Ionian economy started to grow, so did the political view of the world. As mentioned in previous chapters, after the hereditary monarchy of earlier periods came to an end, like many other Greek cities, the Ionians, in general, were self-governing communities with fairly well-to-do citizens.[62] According to Cook (1962, 34), the Greeks in Ionia enjoyed a certain degree of leisure and they could give their minds more freely to cultural pursuits since they became prosperous with extensive properties and used local labor to work in their lands. Hence, it is obvious that with such a prosperity and liberty, the Ionians felt free to speculate on the political, ethical and even metaphysical matters and thus indulged more in theoretical activity by the course of time.

Prosperity and political independence do not, of course, automatically lead to cultural flourishing in Ionia. The close contacts with older civilizations in archaic times were also, needless to say, instrumental preconditions. It must be noted here that the Greeks borrowed observations, techniques and instruments developed by 'eastern' cultures (especially the Egyptians and the Babylonians), but they organized this knowledge and created an entirely new and original system (Vernant 2006, 198). Like literature and art, the archaic and classical Greek mathematics and astronomy owed much to the Near East. However, since the Greeks put the means from the East into new ends, the Greek practice of mathematics and astronomy had some crucial differences from that of the Egyptian and Babylonian. For example, one cannot speak of Egyptian and Babylonian mathematics and astronomy in a strictly scientific sense owing to the lack of sufficient archaeological evidence and the lack of generally formulated theories. In this regard, Egyptian mathematics developed out of technical needs such as surveying, accounting and stock-recording. A well-known Egyptian mathematical document, *Papyrus Rhind* (about 1600 B.C.) was a book of instruction with concrete problems and propositions for

[62] In the first half of the 6th century B.C. the Ionians were forced to acknowledge the formal sovereignty of first the Lydians and later the Persians.

possible solutions (Johansen 1998, 21). Accordingly, Egyptian mathematics obviously had a practical and empirical character without the general theorems. Similarly, Babylonians were aware of the movements of planets, but astronomy was not pursued for its own sake. Observation of the planets was important to be able to predict the future. In this respect, Babylonians believed that all events on earth were dependent on happenings in the heavens. Furthermore, heavenly bodies were thought to be divine. Thus, although it had some implications in the political realm, Babylonian astronomy was far from being 'secular.'[63]

Parallel to the intellectual developments, we witness a progress in the direction to a large-scale, monumental architecture (especially in sanctuaries) and to a type of regular town planning in Ionia. Smyrna gives a good impression of the 7th century B.C. Ionian city, although most of its area remains unexcavated and the existing archaeological data is insufficient and open to misinterpretation.[64] Due to some catastrophe that occurred about 700 B.C. the city must have been reorganized in the 7th century. It seems that the old irregular town planning was completely discarded in the new layout of the city (Fig. 45). According to archaeological evidence, the town planning of Smyrna was apparently regular and well-organized in sort of a 'totalitarian' manner; a temple was constructed on a massive platform at the north end of the site, new streets were regularly laid out on a north-south axis, houses were built on a rectangular plan flanking the main streets, and public buildings were situated closely to each other and visually well-ordered (Cook 1962, 71-74; Owens 1991, 86). Strabo (14.1.37.) gives an account of the city as follows:

> After Smyrna had been razed by the Lydians, its inhabitants continued for about four hundred years to live in villages. They were reassembled into a city by Antigonos, and afterwards by Lysimachos, and their city is now the most beautiful of all; a part of it is on a mountain and walled, but the greater part of it is in the plain near the harbor and near the Metroum and near the gymnasium. The division into

[63] The function of Babylonian astronomy was mainly religious and political in character at the same time. The king had to know what was happening in the heavens both for his personal destiny and that of his kingdom. Thus, astronomy was in the service of a privileged class and the king to regulate (Vernant 2006, 198).

[64] The recent researches at Smyrna now being directed by Meral Akurgal seem to focus on small finds and pottery instead of understanding and documenting the urban strata. See Akurgal (1983).

> streets is exceptionally good, in straight lines as far as possible.

The new houses in Smyrna were well-constructed and more spacious than their predecessors with an open courtyard. However, some householders were obliged to move out of the city walls to live in a suburb on the adjoining nearby mainland slope. The inhabitants felt no necessity to repair the city walls since a part of the city's population was living outside. Yet, towards the end of the century, due to the emerging threat of Lydia, a new and stronger fortification wall was built.

Like town planning in the early Ionian cities, we know rather little about the scope of philosophical thought in the 7th century B.C. However, around the beginning of the 6th century B.C., the first thinkers, the so-called Seven Sages in ancient times, gained a wide reputation particularly in political affairs. Despite some dispute about the tally of the Seven Sages, it has been conventionally accepted that Thales of Miletos (about 624–545 B.C.) was the greatest among them. Aristotle who is regarded as the earliest historian of Philosophy describes Thales as the first philosopher in his work (*Metaphysics*, 1.983a; 1.983b) as follows:

> However, let us avail ourselves of the evidence of those who have before us approached the investigation of reality and philosophized about the truth for clearly they too recognize certain principles and causes … Thales, the founder of the school of philosophy, says the permanent entity is water…

Thales, too, seems to have learned much from both Egyptian mathematics and Babylonian astronomy. For example, thanks to Babylonian astronomical observations and calculations, Thales had the knowledge of celestial cycles and thus he was able to predict the solar eclipse in 585 B.C. Similarly, he is considered to have made a visit to Egypt bringing the study of geometry from there. According to traditional assertions about Thales, he could measure the height of a pyramid by comparing its shadow with that of a man, and he was also able to measure the distance of a ship from the coast by using the knowledge of congruent triangles.[65] In this way, he came to be regarded as the first Greek geometrician. However,

[65] Thales is also credited with the knowledge of other theorems, for example, diameter divides a circle in two halves of equal size and an angle in a semicircle is right.

although his interest in astronomy and geometry was motivated by practical needs, he solved these practical problems based on theoretical mathematical knowledge and most strikingly he offered a general formulation of theorems (Johansen 1998, 21). Hence, it appears that observation and theory were inevitably linked in his faculty of thinking.

As a wise statesman, Thales advised Ionians to form a unified foreign policy and a central government with a single council at Teos in the middle of Ionia. But, Ionia did not unite. Herodotos (*The History*, 1.170) narrates the issue as:

> Good was the judgment of Thales of Miletos (a man of remote Phoenician descent), and that was given before the ruin was accomplished. He bade the Ionians set up a supreme deliberative council, to be established in Teos, as this was the middle point of Ionia, all the other cities there to be held in no greater regard than demes.

The invention of rationality in Greek thought has been often attributed to Thales. His arguments are considered to be clearly rational despite their inaccuracy at the time (Cook 1962, 91; Johansen 1998, 22). Thales conducted an inquiry into the basic principles of the physical world and tried to offer logical explanations to fit the observed facts. Little is known about his original conception of the *cosmos* since we do not possess (indeed if ever existed) his writings.[66] Yet, our primary knowledge of his cosmology comes mostly from Aristotle. According to Aristotle, Thales claimed that the earth stays in place by floating on water like a log. Furthermore, he states that Thales thought water as the basic principle or element being the source of everything in the universe.[67] Aristotle (*On the Heavens*, 2.294a 28-32) mentions Thales' natural theory as:

> Others say that the earth rests on water. For this is the most ancient account we have received, which they say was given

[66] There is a dispute among both ancient and modern researchers about Thales' original writings. While some seem quite sure that Thales did not write anything, others have serious doubts about this assertion. For more discussion see O'Grady (2002).

[67] However, it remains obscure if Thales meant everything is water or whether everything is originated in water. Besides Thales, his successors continued to teach the presence of a basic principle governing all. For example, the basic principle of everything in the universe for Anaximandros is the 'boundless,' for Anaximenes is air and for Pythagoras is the numerical ratio.

> by Thales the Milesian, that it stays put through floating like a log or some other such thing.

The inspiring work of interpreting rationally the physical world was carried on by Thales' successor Anaximandros (about 610–545 B.C.). As a younger contemporary of Thales, he also lived in the city of Miletos which was an intellectual and commercial center, and the chief *polis* of Ionia. Despite the lack of satisfactory evidence, Anaximandros has been commonly considered to be the pupil of Thales.[68] Like Thales, Anaximandros was an active man concerning himself with practical needs. For example, he most probably introduced the *gnomon*, a sundial or solar clock, into the Greek world from Babylonia (Ring 2000, 22). Moreover, he is said to have written one of the earliest examples (maybe the first) of philosophical Greek prose as well as making a geographical map of the earth.

Anaximandros, too, deserves to be called a 'theoretical physicist' as he questioned the structure of the universe. He developed a sophisticated and fully geocentric conception of the *cosmos*. According to the theory Aristotle ascribes to him, the earth, which is cylindrical in shape like the drum of a column with its depth one-third of its width, stays where it is because it is placed at the center of the *cosmos*, fixed by necessity as it is consequently balanced at an equal distance from all extremities. In other words, the earth is motionless since being at the center there is no need to move right or left horizontally and up or down vertically. Aristotle (*On the Heavens*, 2.295b 10) asserts the following:

> There are some who say, like Amaximandros among the ancients, that the earth stays put because of likeness. For it is appropriate for that which is established in the middle and is related all alike to the extremities not to move up rather than down or sideways; but it is impossible for it to make a motion in opposite directions, so of necessity it stays put.

This theory has been described as a momentous leap into the realm of mathematics (Schofield 1997, 52). For no absolute value is attached to any

[68] Although an intellectual connection between the two thinkers may be observed, it is not legitimate to call Anaximandros a pupil of Thales.

direction of space, the structure of the universe, at the center of which is the earth, is truly geometrical and symmetrical. Jean-Pierre Vernant (2006, 203-208) brilliantly puts that there are certain links between the organization of social space within the framework of city planning and the organization of the physical world in the cosmological concepts. In this regard, he refers to Aristophanes who introduces an astronomer, Meton, in *Birds*. Meton is believed to have calculated the lunar months and the solar year. Most importantly, he attempted to build a city according to a rational and geometric model. He claimed that he could design a circular town whose streets must intersect at right angles because this is 'simple and most rational' and converge toward the center because no city would be without a public space at the center and every human society constitutes a kind of circle.[69] Vernant extends his argument by discussing the Greek city. According to Vernant (2006, 214), in the Greek city, urban space is organized symmetrically and geometrically around a public center. In this context, *agora*, the center of public domain where public debates are held and, in principle, every citizen has equal right to make his own argument in front of the assembly, is placed at the center of a city like that of a circle in geometry which is at an equal distance to every point on its circumference. One public hearth has to be at the center of a city (in or very close to the *agora*) allowing other private hearths in individual houses to be at equal distance to the public one. In this way each individual would be similar and geometrically symmetrical in their common relation with each other and with the centre.

A closer look at the Ionian thought of the 6th century leads us to the fact that early Greek thinkers primarily dealt with the underlying structure of things. For A. A. Long (1999, 10), 'inquiry into nature' is the most appropriate designation of the early Greek philosophy. In this kind of inquiry, the Milesian thinkers felt little obligation to traditional religious authorities and they sought positivist and rational explanations to their questions concerning nature. However, it is also legitimate to assert that they inherited many questions and themes from the earlier mythological tradition. According to many scholars, although the Ionian philosophers were dissatisfied with the anthropomorphic character of divinities and reacted against

[69] The ancient Greeks considered the circle to be the most beautiful and perfect shape.

them, they sometimes built their theories upon the popular, mythological conceptions of the *cosmos* that existed for long time in the Greek world. In this respect, some explanations about the origin of the universe had already been narrated in the works of Homeros and Hesiodos. In *Theogony*, Hesiodos actually tells stories about the genealogy of the personalized gods who are responsible for the creation and the stability of the *cosmos*. In such a depiction of the *cosmos* as a plurality of distinct divine entities, each god has its own province to govern. For example, Zeus rules the sky, Poseidon the oceans and Hades the underworld. In comparison, the Milesian concept of atmosphere replaces Zeus and there is no more Gaia but she simply becomes the earth. Moreover, in Ionian thought, no physical event occurs out of the act of the anthropomorphic gods but it is still based on the same theme as the battle between hostile binary powers; cold and hot, dry and wet, dark and light, is the cause of atmospheric events (Kahn 1994, 85-98). In fact, early thinkers did not attempt to separate divinity from nature.[70] In this regard, their thinking is not entirely 'secular.' Thales considered soul as the source of motion. Since the *cosmos* is an active entity, it is full of souls, thus it is divine. On the other hand, we may still argue that cosmology in this period began to free itself from theology and such mythological ideas were somehow converted into a rational content. The real intellectual revolution that the natural philosophers (*physiologoi*) achieved lies in their references to observable regularities in nature that do not depend on the arbitrary will of the divinities and consequently their non-mythological, depersonalized and coherent conception of the *cosmos*.

In early Ionian philosophy, we also witness a parallelism between the geometrical conception of the *cosmos* and the society in the *polis*. The natural theorists were not only concerned with the order of the universe but also the questions of political authority and the relationship between individuals and groups. There was no distinction between nature and society for early thinkers. According to them, social life must be properly organized with the same principles in the *cosmos*. Like the balance and harmony of different powers in nature, social stability, too, could only be guaranteed by the equal and symmetrical relations of

[70] In his book *On Nature*, Anaxagoras does not use the term 'divinity' but by using the expressions like 'knows everything' and 'controls all things' he implies traditional divinity in the general cultural attitude. For more discussion see Broadie (1999).

individuals (Ring 2000, 56). The term *cosmos* is actually interpreted by Plato as 'geometric equality' (Kahn 1993, 111). In short, it should hardly be surprising to trace the philosophical concepts of 'rationality,' 'symmetry' and 'equality' in the realms of urban planning in ancient Greek cities.

4.2. The Pythagorean Proportion and Harmony

Pythagoras has been frequently considered as the founder of Greek mathematical science and philosophical cosmology or the so-called "divine philosophy" (Ring 2000, 40). Although this very assertion about his role in the intellectual life of ancient Greeks seems to be a little exaggerated, it would be erroneous to completely deny Pythagoras' inspiring influence on the origins of Greek philosophy and science.[71] According to the ancient tradition of history of philosophy, he was the ancestor of the "Italian School" and thus, after Thales, the second originator of philosophy (Burkert 1972, 1). Actually, he was the first thinker in history to use the word "philosophy." Diogenes Laertius, in his book *Lives of Eminent Philosophers* (1.12) writes the following about Pythagoras:

> But the first to use the term philosophy and to call himself a philosopher or lover of wisdom, was Pythagoras; for, he said, no man is wise, but God alone.

We possess no extant fragments from Pythagoras himself (maybe he wrote nothing). Yet, later generations did not use their own individual names but attributed all kinds of ideas and mathematical theorems that they developed to their 'mythical' founder with no regard to the concept of historical truth. Therefore, it is hard to differentiate between the original thoughts of Pythagoras himself and those of his disciples. In this respect, 'Pythagoras' quickly came to mean 'the Pythagoreans.' Furthermore, there was obviously no established tradition of Pythagoras, no ancient author used documentary evidence and everything depended on oral tradition in the same way as the Ionians spoke of Ion and the Dorians of Heracles (Burkert 1972, 117). In short, what we know about

[71] Many scholars regard Pythagoreanism as a continuing and stable tradition from which even Plato borrowed much. For more discussion see Burkert (1972, 83-96) and Kahn (2001, 1).

Pythagoras' teachings is mixed with myth and legend which we cannot easily separate from reality.

Like his original doctrines, we know little about his life due to the lack of sufficient and consistent evidence. Our primary knowledge about him mainly comes from a limited number of ancient writers some of whom lived several centuries later than Pythagoras.[72] According to the tradition, Pythagoras, son of Mnemarchus and Pythais (or Parthenis), is born on the island of Samos in Ionia around 570 B.C. In his early adulthood Pythagoras disciplines himself with religious observances and 'scientific' studies. He is said to speak and act with an entire tranquility and calmness; never overcome by anger, laughter, envy and any other mental disturbance or rashness. However, it seems clear that Pythagoras does not sympathize with the 'cruel' government of Polycrates and decides to leave Samos. Iamblichus (*On the Pythagorean Way of Life*, 2.11.) narrates the story as follows:

> And when Polycrates' tyranny was just starting to grow, Pythagoras, now about eighteen years old, foreseeing where it would lead, and that it would be a hindrance to his goal and to his love of learning, which he valued above all, escaped by night without anyone noticing.[73]

According to the tale, he journeys across the sea to visit Thales and Anaximandros at Miletos. Thales admires his difference from other youths and gladly accepts this 'long-haired Samian' boy as a student. He makes Pythagoras a partner in his discourses and teaches all lessons he could. However, Thales gives an excuse of his own old age and weakness and urges his pupil to sail to Egypt and to meet with the 'most divine' and 'wisest' priests there. Having visited Phoenicia and Syria in turn, he finally crosses to Egypt. Iamblichus (*On the Pythagorean Way of Life*, 4.18-19) mentions his journey to Egypt as:

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[72] Prominent ancient sources concerning Pythagoras and his teachings include: Aristotle *Metaphysics*, Diogenes Laertius *Lives of Eminent Philosophers*, Iamblichus *On the Pythagorean Way of Life*, and Porphyry *The Life of Pythagoras*. Besides, Empedocles' and Philolaus' writings can be treated as basic Pythagorean testimony.

[73] The rise of Polycrates' tyranny must be dated to around 532 B.C. Thus, it conflicts with the chronology since Pythagoras must have been born around 550 B.C. Yet, Iamblichus shows little concern to exact dates.

> Form there he visited every holy place, full of great zeal, and with a desire for careful inspection. He was both admired and cherished by the priests and prophets with whom he associated. He learned everything most attentively, and neglected neither any oral instruction commended in his own time, nor anyone known sagacity, nor any rite anywhere and anytime honored. He also left no place unvisited where he thought he would find something exceptional. Hence, he visited all the priests and benefited from the special wisdom of each … so he spent twenty two years in the sanctuaries of Egypt, studying astronomy and geometry and being initiated all the mystic rites of the gods.

The story of Pythagoras continues in Mesopotamia as he is brought to Babylon after being taken prisoner by Cambyses' soldiers. He learns the 'perfect worship of the gods' there and acquires the knowledge of numbers, music and other mathematical sciences. Thus, it seems legitimate to state that the 'wisdom' of the 'East' played a significant part in the formation of Pythagoras' philosophy. In fact, the opinion is common among the scholars that Pythagoras himself, who is assumed to have traveled to the 'East,' brought back 'scientific' knowledge to Greece with him.[74] Because it is his native country, Pythagoras returns to Samos in order to convey his teachings. However, afterwards he finds it difficult to continue the search of learning while being obliged to obey the laws of his country. In this way, he decides to sail westward and settle in the city of Croton in Italy, apparently where he developed most of his philosophical ideas and principles.[75]

Although the details of his teachings are often impossible to recover, it appears clear that the basic doctrines of the early Pythagoreans were governed by a religious code. At this point, we may state that the first principle of their philosophy is to follow the deity. Plato (*Phaedo*, 32. 82), too, seems to have quoted from this Pythagorean religious rationale when he is saying the following:

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[74] On this issue, more cautious scholars like Walter Burkert tend to speak not of Pythagoras himself but of the early Pythagoreans.

[75] This brief account of Pythagoras' early life presented here is mainly dependent on the evidence of Iamblichus since his work *On the Pythagorean Way of Life* is one of the longest, most complex and comprehensive ancient works written on Pythagoras. However, it is still possible to encounter in some ancient sources slightly different versions of Pythagoras' life and development.

> No one may join the company of the gods who has not practiced philosophy and is not completely pure when he departs from life, no one but the lover of learning.

Therefore, unlike the Milesian natural philosophers, the Pythagoreans were not primarily concerned with the material nature of things. Instead, they sought to reveal the ultimate structure and validity of a higher order in their philosophy, that is, the basis of 'the divine order.' Since the Pythagoreans thought that all relationships in the universe were regulated by the same 'harmonious' principles, their chief interest was to understand the *cosmos* and its workings to get in harmony with it. In this respect they considered that investigating and contemplating the patterns and the arrangement of the universe (i.e. the order of the *cosmos*) would cause human soul to become attuned to that order and eventually to become like it. Consequently, complete harmony with the *cosmos* would lead the soul to be with the universe, thus with the god (Ring 2000, 41-47). To clarify the relationship between the universe and man in Pythagorean philosophy, Burkert (1972, 45) posits that the human soul imitates the *cosmos* and human organs imitate the parts of the *cosmos* according to the same higher principle.

So, what was this 'higher' principle of everything in the *cosmos*? In answering to this, the Pythagoreans saw the relevance of the principles of mathematics to the general ruling principles of the universe. In this respect, the Pythagoreans were actually the first who connected mathematics with philosophy. A passage from Iamblichus' work *De Communi Mathematica Scientia* (78.8.-18.) explains the very reason why they devoted themselves to mathematical sciences as follows:

> The Pythagoreans, having devoted themselves to mathematics and admiring the accuracy of its reasoning, because it alone among human activities knows of proofs … they deemed these facts of mathematics and their principles to be, generally, causative of existing things, so that whoever wishes to comprehend the true nature of existing things should turn his attention to … numbers … and proportions because it is by them that everything is made clear. [76]

[76] The quote is from Burkert (1972, 447-448).

As it can be easily understood from the passage above, the study of number and proportion is surely equivalent to the study of the order in the *cosmos* for the Pythagoreans. In this regard, certain relations between numbers have their counterparts in the relations between things. Thus, understanding one's nature means understanding that of the other. Although the idea of number existed long before the Pythagoreans especially in the 'eastern' cultures, according to the ancient sources, they were the genuine forerunners among the Greeks who brilliantly sketched out the doctrine of numbers.

In fact, the Pythagoreans saw numbers in everything. According to them, the numbers in order are the basic principle of the *cosmos* which is the reflection of beauty. In other words, numbers reveal the harmonious structural pattern of the *cosmos* which is the representation of the "world soul." Aristotle (*Metaphysics*, 1.985b-1.986a) reports the following about the Pythagorean conception of numbers:

> And since numbers are by nature first among these principles, and they (the so-called Pythagoreans) fancied that they could detect in numbers, to a greater extent than in fire and earth and water, many analogues of what is and comes into being … and since it seemed clear that all other things have their whole nature modeled upon numbers, and that numbers are ultimate things in the whole physical universe, they assumed the elements of numbers to be the elements of everything, and the whole universe to be a proportion and number.

According to Aristotle, numbers in Pythagoreanism are the principles as independent entities. The Pythagoreans did not attempt to distinguish between the concept of number and corporeality (Burkert 1972, 32; Hermann 2004, 97). In this regard, numbers are not only the formula of what things are composed of but also the basic constituents of physical matters. Therefore, the Pythagoreans thought that if things were made of numbers and if we knew the number of a thing, we could know it. It then follows that all one should do is to learn the number of a thing and

try to relate it to the numbers of other things to fully decipher the code of the *cosmos*.[77]

The Pythagorean number theory seems to have had its most cogent inspiration from music. According to the tradition, Pythagoras himself and his disciples discovered that the harmonic intervals in music can be expressed as simple numerical ratios. The relationship between the pitch and the length of a vibrating string is generally regarded as a discovery of the Pythagorean School (Burkert 1972, 371). In this respect, they discovered that the string which is half in length would vibrate twice as fast as the other string producing a 'chord.' Thus, the ratio of an octave is 1:2, the other additional intervals are set at the ratio of 2:3 for the fifth and 3:4 for the fourth (Hermann 2004, 94). In this way, the basic intervals of a musical scale were expressed in only four numbers: 1, 2, 3 and 4. Advancing the theory, Hippasus, the oldest Pythagorean known to have worked in the realm of mathematics, music and who speculated about natural philosophy, studied similarly the numerical ratios of basic concords with the use of bronze discs. We learn the details of his experiment from a short fragment from Aristonexus (fr. 77). The text runs as follows:

> A certain Hippasus prepared four bronze discs in such a way that, although their diameters were equal, the thickness of the first was in the ratio of 4:3 to that of the second, in the ratio 3:2 to that of the third and in the ratio of 2:1 to that of the fourth. When struck, they produced a (proportional) concord.

Interpreting the four basic numbers in music, the Pythagoreans advanced to relate these numbers to the realm of geometry. According to them, in geometry, 1 represents a point, 2 a line, 3 a triangle (or a surface) and 4 a pyramid (or a solid).[78] Consequently, they developed the system called *tetraktys*, basically the study of the

[77] An interesting testimony about Eurytus the Pythagorean shows that he assumed 250 to be the number of human being. Based on this, he drew an outline of the human being by using 250 pebbles. See Aristotle (*Metaphysics*, 14.1092b.)

[78] To be able to define a surface at least two points must not on the same line. Similarly, to be able to define a three dimensional solid the fourth point must be on a different surface.

first four numbers; 1+2+3+4, with which it is possible to define all the arithmetic, geometric and harmonic relations that exist in the *cosmos* (and in the society).[79]

Although it is impossible to reconstruct the Pythagorean cosmology, we may reach some inferences from the scanty evidence of the ancient writers. According to these ancient sources, for the Pythagoreans, the planets are equal members in the cosmic hierarchy just as basic intervals are equals in music.[80] The Pythagoreans proposed that all planets circle around the earth in a uniform movement and at a certain velocity. Thus, the position of planets in the *cosmos* must have a harmonic relationship determined by number; the distance of the sun to the earth is double that of moon to the earth and similarly other planets have such arithmetical ratios between them. Thus, like everything in the universe, the order of heavenly bodies is derived from a geometrical arrangement based on numbers. At this point, we may interpret that in Pythagoreanism there is an inevitable geometric and harmonic equality in the *cosmos*.

Plato (*Republic*, 7.530d) asserts that "music and astronomy are sister sciences." He clearly seems to have been captured by the Pythagoreans since they attempted to unite the disciplines of music and astronomy. Regarding the coherence of music and heavenly bodies, Iamblichus (*On the Pythagorean Way of Life*, 15.65) reports about Pyhagoras' practice as:

> … he extended his learning and fixed his intellect in the heavenly harmonious sound of the *cosmos*. He alone could hear and understand, so he indicated, universal harmony and concord of the spheres, and the stars moving through them, which sound a tune fuller and more intense than any mortal ones. This harmony is caused by a movement and most graceful revolution, very beautiful in its simultaneous variety, which arises from unlike and variously different sonic motions, speeds, magnitudes and conjunctions, arranged together in a most musical proportion.

[79] Numerical order unites the society and the *cosmos*. According to customs of the Pythagoreans, numbers reveal the principle of order of the universe and of human life in the same manner.

[80] In cosmic hierarchy that Aristotle ascribes to the Pythagorean, ("divine") fire is at the center and then comes counter-earth, earth, moon, sun, five planets and fixed stars in order.

However, harmony must be apprehended by pure intellect and not by physical senses and excellence must be judged by the scale based on the proportions (Hermann 2004, 94). It is clear that the Pythagorean conception of harmony referred as seldom as possible to experience or experiment. Rather, everything is derived from the calculation of ratios. Hence, it may be argued that such devotion to intellectual practices might have been reflected on the evolution of orthogonal planning in ancient Greece. This principle presents us a plausible account of the implementation of the grid-plan on the impossible landscapes where construction requires high retaining walls and staircases. Accordingly, not sacrificing convenience and necessities of the building (i.e. rationality), whole parts of the city are supposed to be in conformity with the theoretically and proportionally designed layout which the Pythagoreans considered "good" and "beautiful."

Further development of the Pythagorean cosmology is still numeric. The fundamental constituent of numerical order is unit. Indeed, in the geometric view, the Pythagoreans saw no difference between unit and point or interval. Thus, when dealing with unit, we must consider both point and interval at the same time. According to the Pythagoreans, unit is the ultimate facilitator of order.[81] The function of unit (or point, or interval) is to convert infinite to finite by simply introducing limit or boundaries upon it. The Pythagoreans thought that the *cosmos* appears when a unit is planted in the infinite (Hermann 2004, 99). In other words, the imposition of limit on the unlimited creates the universe. In this context, the universe is spherical (as boundary) and surrounded by the unlimited. So, limit is the essential nature of all things (Burkert 1972, 42). Eventually, being equivalent to unit, number is the harmony and bounder of the thing that limits and the thing that is limited.

The idea of the harmony of limit and limited seems to have its counterpart in the realm of epistemology. Philolaus (fr. 6) asserts that knowledge is limited to human beings whereas the true essence of things is only accessible to gods. Thus, according to the Pythagoreans, we cannot know the infinite in the nature of matters

[81] An analogy to clarify the creation of order by unit can be made in that a simple scale is created by imposing points with regular intervals between them on a continuous line.

but we can solely know what we conquered in the unlimited through intellectual activity. This very concept is likely to have profoundly influenced city planning activities. Several scholars such as McEwen and Waterhouse assert that ancient Greeks believed that landscape (i.e. nature as a whole) representing the infinity on earth belongs to and is governed by gods. However, carefully imposing a limit thus an order (a city) on the 'unlimited' landscape takes one closer to the knowledge or the 'design' of gods. In other words, it makes the unknown in the infinite world known. Yet, this limitation is also limited in itself. Only with the permission of gods can the human being 'conquer' the unknown. There must a harmony between the finiteness and infiniteness, thus between human beings and gods.

Above all, Pythagoras, the founder of the doctrine, pursued the "right way of life." He tried to establish a proper relationship between man and gods. Every intellectual activity of Pythagoras is full of divinity. Iamblichus (*On the Pythagorean Way of Life*, 6.31) mentions that he sought the ways to purify the soul via scientific preoccupations:

> And the mathematical sciences, metaphysics and all scientific matters which cause the soul to see truly and which purify the blindness imposed on the mind by other pursuits, were introduced by him to the Hellenes, and enabled them to behold the actual principles and causes of all things.

Although the goal of the Pythagorean teaching was primarily religious, the Pythagoreans used political means to achieve their ends. In fact, Pythagoreanism deeply affected the society. According to the Pythagoreans, a human being should never be allowed to do as he likes. To avoid the disorder or "anarchy" in the society, there should always be a powerful government, a lawful authority (Hermann 2004, 60). In the Pythagorean society everything is in common and the same for all people. Iamblichus (*On the Pythagorean Way of Life*, 30.167) explains the Pythagorean the perception of justice which reminds us of a form of "aristocratic communism" as follows:

> The first principle of justice, then, is the concept of common and the equal, and the idea that all should approximate as nearly as possible in their attitudes to having one body and

> one soul in which all have the same experience, and should call that which is mine and which belongs to another by the same name.

According to tradition, for the first time women and children were also admitted to the Pythagorean School as disciples. In fact, it is assumed there were two types of followers in the Pythagorean society: the first group was called "*akousmatikoi*" (or listeners) and the other was "*mathematikoi*" (or learners). Iamblichus (*On the Pythagorean Way of Life*, 18.80-89) clearly states that the former is lower class, many in number and left with only a collection of dicta without explanation. The members of this class were not allowed to see and discuss with Pythagoras directly but had to hear him behind a curtain. These never attempted to add anything of their own innovation considering all innovations to be wrong. On the other hand, members of the latter were the most sophisticated or "genuine" followers with a scholarly outlook to seek further answers with proofs and explanations. These were connected with mathematics, astronomy and music. Since they attained the real teachings of Pythagoras, most ancient writers distinguished them from "imperfect," exoteric and preliminary class of *akousmatikoi*.

The *mathematikoi*, the 'true' Pythagoreans, inspired not only later philosophers but also architects and town planners. For example, the architect of the Temple of Athena in Paestum in south Italy which was built ten years after Pythagoras arrived at Croton appears to have chosen to make use of the Pythagorean harmonic and mathematical ratios to control the modules of his building. The Pythagorean numerical symbolism is seen in the ground plan of the temple's *peristyle* which has six columns on each front and thirteen columns on each side. From center to center of the corner columns, the fronts measure forty Doric feet (in Pythagorean numerology, four is thought to be the creative number and ten the perfect one). Holloway (1973, 67-68) describes the building as follows:

> Principle rather than convenience seems to have inspired this deviation from conventional practice. For the architect of the temple of Athena seems to have designed its ground plan as an embodiment of Pythagorean harmonic ratios. Since he spaced the centers of the columns forming the colonnade

> uniformly 8 Doric feet apart, the unit of measure may be considered 4 Doric feet, half intercolumniation. Consisting, therefore, of ten 4-foot modules, each front represents the productive Pythagorean number four multiplied by the perfect number ten. And the sides, each having twenty-four 4-foot modules, represent the product of the productive number four multiplied by twenty-four, the product of the components of the *tetraktys*.

However, within the scope of this investigation, the primary focus will be on two eminent town planners of the ancient world, namely Hippodamos and Pytheos, both frequently associated with the Pythagorean School.

4.2.1. Metapontum: The Pythagorean Influences on Italian Cities

Commonly regarded as an important Greek colony in South Italy, Metapontum flourished around the 6th century B.C. The city was established about fifty kilometers west of Taranto on the Gulf of Taranto. Its prosperity was due to the wide plain of the rivers Bradano and Busento. In the middle of the 6th century, Metapontum was a powerful member of the victorious alliance against Siris. However, the limited evidence indicates that its political power hardly extended far inland (Woodhead 1962, 63). First aerial photography and then excavations since 1965 in the urban center of Metapontum have revealed the grid plan of the city (Carter 1990, 405). The design principle was obviously the regular division of urban space according to strict geometrical patterns (Fig. 46).

According to ancient tradition, Metapontum is said to have been founded and settled by the companions of Nestor, the aged king of Pylos, after the Trojan War (Woodhead 1962, 29). Yet, archaeological as well as literary evidence place the heyday of the city to the 6th century B.C. In the first half of the 5th century, Metapontum became the new home of the 'philosophical prophet,' Pythagoras. As mentioned previously, Pythagoras left his homeland Samos for Croton. His political influence increased so much that most of the generals and leaders in Croton were the followers of Pythagoras. Even the government of Croton was turned into an aristocracy of the Pythagorean elite. However, according to Polybius, the domination of Pythagoras eventually caused a bloody upheaval in Croton. This reaction against Pythagoras drove him to Metapontum where he died about 475 B.C.

There is no reason to doubt that the influence of the Pythagorean politics extensively spread in this Italian city, too. Nevertheless, we do not possess adequate evidence to observe the direct Pythagorean influences on the urban development of Metapontum.[82]

It is worth stressing that the planning of the urban area and the organization of the *chora*, the territory on which the city's economy depended, occurred at the same time as parts of a single design (Mertens and Greco 1996, 243).[83] All the arable land in the *chora* was parceled out and each farmhouse had a parcel of land (Fig. 47). The archaeological studies have revealed remains of two schemes of land division. The eastern scheme was divided by parallel drainage ditches into thirty eight long strips with transverse boundaries delimiting individual lots measuring approximately 325 x 205m. These lots were also divided into smaller parcels for the new settlers. The earliest farms here are dated to roughly 550 B.C. The western scheme was similar in organization but slightly later (Ward-Perkins 1974, 24). According to Carter (1990, 441), "the analysis of the distribution of land does not reveal the existence of an aristocracy and gross social inequalities that such a term implies." In fact, the agricultural production was dependent on the small or medium-sized individual citizen farms. The society seems to have made maximum use of the land in 'equal' allotments.[84]

The urban center of Metapontum displayed a similar arrangement, too. The city, bordered by the shoreline and bends of the rivers Bradano and Busento, was separated from the *chora* by a modest and nearly linear wall between the two rivers. This vast area covering about 150 hectares was originally divided into two zones, one public and one private. The division seems to have been realized via a straight

[82] Actually, many scholars imply that the Pythagorean influence on Metapontum (and on any other Italian cities) was solely political not essentially reflected on the urban form. However, the date of urban development of the town roughly coincided with that of the Pythagorean activity in Italy. Hopefully, future studies on the urban center of Metapontum will reveal formal Pythagorean influences on Italian cities.

[83] Unfortunately, the excavation studies have focused more on the *chora* rather than the urban center of Metapontum. In 1981, a team form the University of Texas under the guidance of J.C. Carter began an intensive survey of the territory.

[84] There are also some interesting theories suggesting that the principles of land division in archaic Greek cities inevitably influenced the urban planning. For more discussion see Boyd and Jameson (1981, 327-342).

line running in the northwest-southeast direction. This line was probably the main road of the city leading from the sea to the interior *chora* and constituted the initial element of the regular grid of the urban fabric (Mertens and Greco 1996, 248). The crossing streets running in northeast-southwest direction had a width of approximately 12m. However, except for the main road (and probably two others to the south), the other northwest-southeast streets were much narrower and of secondary importance (Owens 1991, 42).

An extensive open space, the *agora*, was assigned at the foundation of the colony as the public zone of the city for religious and administrative functions. To the east of the *agora* stood a highly significant building identified as the *ekklesiasterion*, the place for public gatherings. In its initial form, it consisted of wooden bleachers. Yet, it was destroyed around 600 B.C. by fire and rebuilt in the mid-sixth century with the same underlying design. The original plan was circular with a diameter of 62m. It had two opposing set of seating places separated by a central corridor. At the center of the structure stood a rectangular open space provided an *orchestra* for the orators (Mertens and Greco 1996, 248). This building with a seating capacity of between 7000 and 8000 people was most probably the place where the decisions about the town were taken. In the 6th century, the *agora* was marked by inscribed stones, *horoi*, as the monumental area of the city.

There were two distinct private areas for dwellings of the settlers separated by the broad band of land in the northeast-southwest direction from the sanctuary of Apollo Lykeios to the *agora*. The first one that stood to the north was slightly earlier. The one to the south, on the other hand, was added later as the second residential quarter. Both quarters followed the overall geometric pattern of the city. The rectangular blocks, *insulae*, in these residential quarters were long and narrow measuring approximately 190 x 35m.

In sum, it is obvious in the urban layout that the basic 'zoning' principle was applied to the area in the form of bisection into one residential and one public zone. The residential blocks were separated from each other with *plateiai*, avenues and *stenopoi*, narrower alleys which clearly indicates a certain hierarchy among the streets. In terms of political organization, in addition to the regular pattern of arable

land division, the presence of 'uniformly' designed housing plots suggests that the citizens enjoyed a certain degree of 'geometric and harmonious equality.'

4.3. The Pythagoreans and Hippodamos

Hippodamos of Miletos, a foremost architect or town planner in the 5th century B.C., occupies a very special place in the history of urban theory. His name had a great reputation already in antiquity for his specific contributions to Greek city planning. Hippodamos is frequently credited with having been the 'first' person in history to lay out cities on a regular plan with straight streets cutting one another at right angles. Yet, this somewhat rash assertion is surely not correct since this type of regular plan was widely in use and had already become archaic in the Mediterranean region long before Hippodamos' time. Actually, the idea that he was the 'inventor' of the grid-plan seems to have been rooted in the misinterpretation of Aristotle's statements (*Politics*, 7.1330b 21-25) in his discussion on the position and arrangement of a city:

> The arrangement of the private dwellings is thought to be more agreeable and more convenient for general purposes if they are laid out in straight streets, after the modern fashion, that is, the one introduced by Hippodamos.

However, although Hippodamos could not have invented the 'regular' planning in ancient cities, he may nevertheless still be considered as the 'first' urban planner who based his model on theorizing and rationalizing the preexisting system (Ward-Perkins 1974, 16; Castagnoli 1971, 71). Therefore, his fame emanated from his theoretical approach to town planning rather than a practical one. In fact, Hippodamos appears to have been a speculative man who was concerned with politics and natural philosophy as well as town planning. Some late lexicographers such as Hesychius and Photius described him as a *meteorologos* who sought to explain nature. According to Vernant (2006, 250), from this point of view, he fits well into the Ionian tradition, following directly Thales and Anaximandros. Therefore, it seems ultimately reasonable to assert that Hippodamos must have been deeply influenced by his native town's (Miletos')

stimulating intellectual activity in all fields. According to another point of view, however, Hippodamos' thoughts were mainly dependent on the Pythagorean principles. Scholars like Hoepfner, Hildenbrand and Oncken seem to be entirely persuaded by the assumption that Hippodamos was a member of the Pythagorean School. It is also possible to encounter this view in ancient sources. For example, Stobaeus in his *Florilegium*, which was compiled in the late 5th century A.D. almost a thousand years after Hippodamos, considered him as a Pythagorean when presenting us some fragments of the book *On Government* allegedly written by "Hippodamos the Pythagorean."[85]

It is certainly true that the ancient sources are primarily concerned with his achievements as an architect or a town planner. Nonetheless, although they seldom refer to Hippodamos' works as a political philosopher, there is a certain consensus among the scholars on the assumption that Hippodamos was a political theorist who proposed an ideal order of society. Besides, he may have written a treatise on the best form of constitution (Ward-Perkins 1974, 14). Aristotle (*Politics*, 2.1267b 22-31) says the following about Hippodamos' physical appearance and his preoccupations:

> Hippodamos, son of Euryphon, a Milesian who invented the division of cities into blocks and cut up Piraeus, and who also became somewhat eccentric in his general mode of life owing to a desire for distinction, so that some people thought that he lived too fussily, with a quantity of hair and expensive ornaments, and also a quantity of cheap yet warm clothes not only in winter but also in summer periods, and who wished to be a man of learning in natural science generally, was the first man not engaged in politics who attempted to speak on the subject of the best form of constitution.

According to J.C. Hogan (1959, 773), Hippodamos tried to methodically find the optimum of the social structure of the state. Indeed, political and social spheres and urban space were not separated in his thought. Hippodamos' real innovation

[85] The personality of Hippodamos has remained an undefined and shadowy issue. There is an ongoing discussion among the scholars whether there may have been at least two men called Hippodamos; one is architect Hippodamos from Miletos and the other was Hippodamos the Pythagorean from Thouroi who wrote *On Government.* It is difficult to ascertain whether these two were the same person. Besides, other than being a Pythagorean, Hippodamos is sometimes classified as a Sophist. For more discussion see J.C. Hogan (1959, 776).

consisted in his realizing that the form of the city was the form of the social order (Mumford 1961, 172). In this regard, he attempted to associate the Greek speculation on the ideal society with the actual experience of city planning. At this point, we may extrapolate that, according to Hippodamos, the practice of city planning should have a higher goal to reflect an ideal and 'rational' order of the society.

Yet, what are the constituents of this 'rational' order of society? We may find a response also in Aristotle. As stated above, according to Aristotle, Hippodamos discovered the division of *poleis* in an attempt to connect the physical expression of the city with the order of the society. In Hippodamos' ideal system, the land was divided into three parts just like the society into three classes. Aristotle (*Politics*, 2.1267b 31-38) clearly conveys Hippodamos' tripartite system as follows:

> His system was for a city with a population of ten thousand, divided into three classes; for he made one class of artisans, one of farmers, and the third the class that fought for the state in war was the armed class. He divided the land into three parts, one sacred, one public and one private: sacred land to supply the customary offerings to the gods, common land to provide the warrior class with food, and private land to be owned by the farmers.

It must be noted here that the idea of the limitation of the city with a certain number of citizens and that of the threefold division of society and land appear to have been profoundly influenced by the Pythagorean doctrines. First of all, it seems likely that Hippodamos had a penchant for mathematical regularity and geometrical symmetry.[86] He based his system on the theory of geometry and numerology that indicates a Pythagorean influence. Traditionally, the Pythagoreans perceived the things that are divisible by three to be perfect and eternal.[87] Believing this, they facilitated a similar threefold classification of "rational" beings –gods,

[86] All rational men in antiquity aspired to be social geometricians. In fact, utopia (an abstract mode of thinking) was nothing more than an exercise in solid geometry. See Mumford (1961, 172).

[87] For more information see Iamblichus *On the Pythagorean Way of Life* and also John C. Hogan (1959).

mortals and divine beings like Pythagoras –which might be treated as the forerunner of Hippodamos' ideal society.

Furthermore, in the context of the social structure, the Pythagoreans thought that the society must be in accord with the principles of harmony and number theory, thus, the provision of harmonious relationship in the society necessitates a systematic partitioning of people at a certain distance from each other. In other words, differentiation of the society is required to ensure the complete unity and harmony of the state. Accordingly, all classes are united and equal in the political sphere to compose a unified society. Therefore, Hippodamos' notion of equality can be attributed to the Pythagorean influence, too. This notion can be encountered in Aristotle (*Politics*, 2.1268a 12-14) when he is criticizing Hippodamos' proposition of equal share in government as follows:

> The governing officials were all to be chosen by the assembly of people, and this he [Hippodamos] made to consist of the three classes of the city.

However, Hippodamos conceives of the physical universe and the human world as entities whose constituent elements, being not entirely homogeneous, are arranged according to the rules of proportioning in a way that their divergence produces a unity or harmony, which reminds us of the Pythagorean principle (Vernant 2006, 250). We may grasp something about Hippodamos' conception of unity and harmony in Stobaeus' *Florilegium*:

> For harmony is the virtue of the world, good order is the virtue of the state; health and strength are the virtue of the body. For each of the parts is put in order in relation to the whole and the universe. Eyes see for the sake of the whole body and all other parts are ordered in relation to the whole and the universe (*On Happiness*, fr. 26).
> Concerning the political organization and of the kinds and number of citizens I have spoken already. I shall now try to speak of the harmony and unity. I claim that the harmony of a civil society comes from three elements –teaching, tradition and law … It is necessary for all these three to be attached to the beautiful, the profitable and the just … In general one must try through these things as much as possible to make

> the state in its parts agreeable and harmonious, not factious and discordant (*On Government*, fr. 93). [88]

Nevertheless, it is impossible to entirely reconstruct the ideal system attributed to Hippodamos due to the lack of its intrinsic working details. In fact, unlike in theory, neither literary allusions nor archaeological evidence suggest a clear example of the implementation of grouping of buildings or laying out quarters and streets in groups of threes (Mumford 1961, 172). Architecturally speaking, Hippodamos is known to be, albeit not proven, involved in the planning of Piraeus, the port town of Athens, Thouroi in south Italy, Rhodes and Miletos through which we obtain scanty evidence of his system.[89]

Although the reconstruction of the entire plan of Piraeus remains conjectural, it seems safe to state that the city had an orthogonal plan which can be dated to the time of Pericles before 445 B.C. A few streets which meet at right angles have been discovered at Piraeus though it lacks a single and rectangular grid system (Castagnoli 1971, 17). However, what is more illuminating for the planning of the city is the series of the 5th century B.C. boundary stones which indicated the divisions within the city. Despite the lack of proof, the date of the boundary stones is consistent with the date of Hippodamos' activity, and thus, it is assumed that these stones were the integral parts of his program. These 16 boundary stones were placed around the public areas and public structures to mark the boundaries between public and private zones of the city. Besides, owing to the texts on two of the stones[90], it is suggested that the separate systems of grid might have been applied to each of several sectors of Piraeus (McCredie 1971, 97).

Hippodamos' connection with the foundation of Thouroi in 443 B.C. remains speculative. According to McCredie (1971, 98), there is no reason to doubt that he

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[88] These fragments in Stobaeus' *Florilegium* were allegedly penned by Hippodamos. The quote is from Hogan (1959, 777-783).

[89] In fact, there is a problem with the chronology of Hippodamos. He could not have planned Miletos, Piraeus, Thouroi and Rhodes unless he lived to be about 100 years old. Thus, it could be that there are more than one Hippodamos of Miletos, an earlier one who planned Miletos and a later one (maybe his grandson) who planned the others.

[90] The texts are translated as "Here, up to this street, the City has been planned" and "Here, up to this street, is the plan of Mounichia." For more information see Hill (1932). "Some Boundary Stones form Piraeus" in *American Journal of Archaeology*, Vol: 36, pp. 254-259.

participated in the colonization activity, thus, naturally, the plan of the city is attributed to Hippodamos. The plan itself is still obscure due to the limited excavation of the site. However, the results have suggested that the city was divided by streets into major rectangles. These major rectangles were then subdivided by smaller streets, forming blocks with the Pythagorean harmonious ratio of 1:2 (Cahill 2002, 22). Nonetheless, the statements of Diodoros (12.10.6-7) remain to be our most informative accounts about the layout of the city:

> Believing this to be the place which the god had pointed out in an oracle, they threw a wall around it, and founding a city there they named it Thourion after the spring. They divided the city lengthwise with four avenues, the first of which they named Heracleia, the second Aphrodisia, the third Olympia and the forth Dionysia, and crosswise they divided with three avenues, of which the first was named Heroia, the second Thouria, and the last Thourina. When the rectangles enclosed by these avenues were filled out with streets, the city appeared well laid out in its residential districts.

Interpreted as such, Hippodamos made conscious use of a complex theoretical geometry. The system of planning at Thouroi was a refined one and certain principles were obviously employed (Fig. 49). For example, the grid involved at least two orders of divisions of streets, one was *plateiai* (primary avenues) and the other was *stenotoi* (secondary streets) which implies a hierarchy among urban passages.

Rhodes represents another instance of an ambitious orthogonal city layout in antiquity (Fig. 48). The foundation of the city is dated to the time of the Peloponnesian War in 408-7 B.C. The excavation studies and the examination of the aerial photographs suggest that the city certainly had a grid-plan.[91] Strabo (14.2.9) attributes the planning of Rhodes to Hippodamos as he states the following:

[91] The investigation was led by J. Bradford and I.D. Kontis. See Bradford (1956). "Fieldwork on Aerial Discoveries in Attica and Rhodes: Part I, The Town Planning of Classical Rhodes" in *The Journal of the Society of Antiquaries of London*, Vol: 36, pp. 57-69.

> The present city [Rhodes] was founded at the time of the Peloponnesian War by the same architect, as they say, who founded Piraeus.

It is confirmed by the archaeological evidence that the underlying system of the grid consisted of three orders of division. The largest element was a square of which the sides measured one *stadion* (600 feet or approximately 180m). In the second order, each of these squares was quartered to produces smaller squares of which the sides measured one-half *stadion*. In the third, each of these squares was divided into six identical parts to form rectangular blocks measuring 100x150 feet (approximately 30x45m). This division seems to be fitting perfectly with the Pythagorean numeric ratios of 1:2:3:4. In addition, streets that bounded these squares and rectangles varied in width according to a certain hierarchy (McCredie 1971, 99; Kostof 1991, 127).

We can also see in the city plan which is partly recovered that although the scheme had a complex theoretical basis, it was flexibly adjusted to the demands of the site. It appears that the rhythm of the division was occasionally interrupted where the configuration of the landscape made it inconvenient. This definitely displays the potential of practicability and rationality in the system attributed to Hippodamos.

To recapitulate, it should be taken as natural that Hippodamos' system was worthy of interest and attention in ancient times as well as the modern era since he attempted to apply theoretical systems to the problem of city planning. In fact, as a town planner, he managed to comprehend the experience of his time and expressed it in the cities he designed. Being a Milesian in Ionia, he must have been most familiar with colonization practices which required a system suitable to subtle organizations. His reputation as a *meteorologos* implies his concern with theoretical natural sciences. Finally, the streets plans of the cities designed by him clearly stem from a theoretical geometric construction of which constituents are derived from the Pythagorean principles.

4.3.1. Miletos: The Birth of Urban Theory

Miletos was one of the oldest and the most prominent Ionian settlements during the 7th and 6th centuries B.C. in western Asia Minor. This coastal city was situated on an extensive and level site with four harbors. It is known that in the archaic period, the city became the *metropolis* of the so-called Milesian territory. The word "Milesia" seems to have been first attested in two ancient writers, Herodotos and Thucydides.[92] Indeed, we do not know the exact boundaries of the Milesian territory. However, according to ancient testimony and archaeological evidence, the whole peninsula, with the area of approximately 400 square kilometers on which the city of Miletos situated to the north, constituted the main nucleus of Milesia. In addition, the territory probably included a part of the Meander Plain and Mount Mycale across the Latmos Gulf. It has also been assumed that Mount Grion to the east and several small islands to the west such as Lade, Lepsia, Leros, Patmos and Icaros were under the control of Miletos. Due to the silting of the site by the Meander River, the ruins of the ancient city lie in the middle of a plain. In classical times and even earlier Miletos is known to have been one of the main centers of trade and art in Ionia. Its intellectual life also contributed much to the development of the Ionian civilization.

The link between the foundation of Miletos and the Ionian migration movements at the end of the second millennium B.C. has been an issue of debate among the modern scholars.[93] In fact, before them, some ancient writers seem to have already related these two historical phenomena with each other. For example, Pausanias (*Description of Greece*, 7.2.1-3) claims that Miletos was founded by the Ionian migrants (especially by the Athenians). He narrates the foundation story as follows:

> A few years afterwards Medon and Neileus, the oldest of the sons of Codrus, quarreled about the rule, Neileus refused to allow Medon to rule over him, because he was lame in one

[92] Herodotos (1.17, 18, 46, 157; 5.29; 6.9), Thucydides (8.26.3)

[93] Therefore, Miletos must have occupied a key position in understanding the Ionian migration. Hopefully, careful archaeological excavation studies at this site may help reveal the nature of the Ionian migration around the 12th century B.C.

> foot. The disputants agreed to refer the matter to the Delphic oracle, and the Pythian priestess gave the kingdom of Athens to Medon. So Neileus and the rest of the sons of Codrus set out to found a colony, taking with them any Athenian who wished to go with them, but the greatest number of their company was composed of Ionians … when they landed in Asia they divided, the different parties attacking different cities on the coast, and Neileus with his party made for Miletos.

In addition to this story, Strabo (*The Geography of Strabo*, 14.1.6) attributes the foundation of Miletos to a much earlier period. According to him, the people who first settled here came mainly from Crete. He quotes the following from Ephoros:

> Ephoros says: Miletos was first founded and fortified above the sea by the Cretans, where the Miletos of older times is now situated, being settled by Sarpedon, who brought colonists from the Cretan Miletos and named the city after that Miletos, the place formerly being in the possession of the Leleges; but later Neileus and his followers fortified the present city.

According to Herodotos (1.146) the story goes that the Greeks did not bring their women to Miletos but married native women whose fathers and husbands were slaughtered. Thus, according to ancient sources, it is likely that the Greeks settled in the area by the 11th and 10th centuries B.C. Actually, despite the lack of sufficient archaeological evidence, it has also been suggested that in the middle of the second millennium, Miletos was profoundly affected by Minoan influence. A considerable number of wall painting fragments having similar representations to the Minoan ones in Knossos have been discovered around the Milesian territory. The themes depicted on these wall paintings were also attested on those found at Alalah in southern Turkey, at Tel Kabri in Israel, and at Tel el-Daab in Egypt indicating a certain relationship between Asia Minor, Crete and the Near East in early times. Furthermore, these wall paintings with some religious depictions produced according to the Minoan artistic style clearly demonstrate that the Minoan religious cults were also performed in Miletos to some extent (Greaves 2002, 90). Nevertheless, it still remains too speculative to regard Miletos as a Minoan settlement.

However, the city walls, some ruins of early dwellings and a large amount of pottery, all dating to the Mycenaean period (approximately 1300-1100 B.C.) discovered by German archaeologists[94] in the immediate neighborhood of the Temple of Athena clearly indicate that an important Mycenaean settlement existed in Miletos.[95] The ancient Hittite official archives also seem to corroborate this assumption. Although it remains unproven, many scholars including the excavator W.D. Niemeier hold the view that Miletos and the Hittite *Millawanda* (or *Milawata*) are identical. Niemeier (1997, 200-205), the director of the excavations at Miletos, suggests that the great destruction of Miletos at that time was contemporary with that of *Millawanda* mentioned in Hittite written sources. According to the Hittite annals, king Murshili II sent an army to *Millawanda* to destroy the city against *Ahhiyawa* which is supposedly the Hittite equivalent of the Mycenaeans.

Although we know little about Miletos of the Late Bronze Age between the 11th and the 9th centuries B.C., we may still state that Miletos' urban development seems to have been interrupted at this period.[96] On the contrary, however, the city passed through a rather wealthy period from the 8th to the 6th centuries B.C. Its inhabitants prospered due to the establishment of a considerable number of colonies on the Black Sea and the Mediterranean coasts (Akurgal 1973, 206). According the ancient sources, Miletos was the mother city of over ninety colonies including Naukratis in Egypt, Cyzikos on the south coasts of *Propontis* (Marmara), Sinope, Amisos and Olbia in the Black Sea region.

It is not possible to write a complete and comprehensive history of Miletos. Our knowledge, albeit not always correct, comes primarily from several ancient authors. Nicholas of Damascus, who lived in the time of Augustus, states that the Milesians were ruled by the Neleid Dynasty in the very beginning. After the last

[94] Excavations at Miletos were first begun in 1899 by T. Wiegand. After 1938, C. Weickert took over the investigations. During 1960s and 1970s G. Kleiner led the archaeological studies. More recently, V. von Graeve, W. Muller-Wiener, R. Senff and W.D. Niemeier are excavating at the site.

[95] For more information on the archaeological remains dating to the Mycenaean era see Greaves (2002, 82-89).

[96] It must also be noted here that the so-called Geometric period, especially the 9th century B.C., must have been crucial for Miletos' cultural development since its relations with the 'East' and other parts of the Mediterranean were increasing.

king of the Neleid Dynasty, Leodamas, was murdered, the monarchy collapsed and political power passed to the powerful *prytanis* or the chief president. Later, tyranny was established in Miletos. The famous tyrant, Thrasyboulos, who lived at the end of the 7th century B.C., successfully warded off the attacks by Sadyattes and Alyattes, the Lydian kings. However, in 546 B.C., Miletos, together with Sardis, the Lydian capital city, was conquered by the Persians. In 499 B.C., Miletos, allied with other Ionian cities, started the Ionian Rebellion against the Persian Empire and destroyed the lower city of Sardis by fire. Nevertheless, this did not suffice and the result was that the Persians seized and destroyed the city in 494 B.C. After the defeat of the Persians in 479 B.C., Miletos was reconstructed around 470 B.C. following the ruined axes of the old town.[97] The re-planning of Miletos is commonly attributed to Hippodamos and regarded as the largest urban planning project hitherto realized by the ancient Greeks.

Miletos' urban layout was apparently based on a strict geometrical scheme, more specifically on a true grid pattern (Fig. 50).[98] Hanfmann (1975, 24) posits that the grid-plan of Miletos shows one of the early examples of a 'rationalized' city plan in ancient Greece. Actually, the urban layout of Miletos is quite complex and difficult to comprehend. As mentioned earlier, Hippodamos acknowledged the 'zoning' principle and thus placed the most public buildings of the city in the most public area (Fig. 51). Archaeological investigations conducted at the site have revealed that the 'public' zone of Miletos was allocated at the center of the city by subtraction of a certain number of rectangular blocks, *insulae*, which lay between the so-called Lion Harbor to the northwest, the so-called Theater Harbor to the west and the so-called Athena Bay to the southwest of the peninsula (Hanfmann 1975, 26; Owens 1991, 33). Indeed, classical city planners reserved the public area of the city for divine presence. As in many other ancient Greek cities, in Miletos too, the

[97] There is an ongoing discussion whether the city was laid out according to the preexisting system or to an entirely new grid system. However, there is archeological evidence, albeit not satisfactory, indicating that a kind of a regular planning system existed before the 5th century B.C. See Waterhouse (1993, 102).

[98] The excavation studies at Kalabaktepe, further south of the peninsula, do not seem to justify that a grid pattern in 'Hippodamian' fashion ever existed in archaic times at this settlement. But, it is also suggested that this region was used for defensive purposes. For more discussion see Greaves (2002, 107-109).

respect for sacred traditions was a strong consideration in rearranging the city. In this respect, G. Kleiner (1968, 25-26) states that the two important sanctuaries, namely the Temple of Athena and that of Apollo Delphinios, were assigned as the starting points for the renewal of Miletos.

The Temple of Athena was situated on the southwest part of the peninsula and to the south of the so-called West Agora which was the most recent of the three Pi-shaped *agorai* in Miletos and probably erected in the late Hellenistic era. The temple measuring approximately 18 x 30m was built in the first half of the 5th century B.C. Unfortunately, all that has survived to the present day are the rough stones forming the podium of the temple. The stone blocks that have been uncovered indicate that the building was of the Ionic order (Akurgal 1973, 221). The *peristasis* of the building had six columns on the short sides and ten on the long sides. However, von Gerkan has suggested that there could have been seven columns on the rear but six on the front providing wider spaces between front columns, thus facilitating entry and exit from the temple. The structure perfectly conforms to the over-all city plan of Hippodamos.

In addition to the Temple of Athena, another important religious center in the town was the Temple of Apollo Delphinios placed to the east of the Lion Harbor as the god Apollo was known particularly as the protector of sailors and ships in antiquity (Fig. 52). The original *temenos* was established in the archaic period. However, the present day remains of the structure are largely dated to the Hellenistic period. In the Hellenistic times, the building was enclosed on three sides by a series of *stoas* which were later altered in the Roman era. The *stoas* in the Hellenistic period were of the Doric order but modified into the Corinthian style in Roman times. The entrance to the *temenos* measuring approximately 50 x 60m was provided via three gates on the west side, but, later, a Roman *propylon* was added also on the west side. An altar, circular in shape, together with four portable altars and the ruins of three *exedrae* have been uncovered within the courtyard. In the courtyard was also the columned edifice on a high cylindrical base with a large circular foundation (Akurgal 1973, 211). It has been suggested by the researchers that this structure was probably a part of a *heroon* dating to the late Hellenistic or Roman period.

To the south of the Apollo Delphinios sanctuary and the Lion Harbor lies the so-called Lion Bay district. This district formed the city center of Miletos from the 2nd century B.C. onwards (Figs. 52, 53, 54 and 55). The strict orientation of the buildings in the Lion Bay district displays an obvious alignment with that of the Temple of Athena which clearly demonstrates that the Hellenistic city plan followed the grid-plan drawn by Hippodamos in the 5th century (Akurgal 1973, 210). Here were located the harbor *stoa*, the North Agora, the processional road (Fig. 57), the Ionic *stoa* (Fig. 56), the gymnasium, the *bouleuterion*, and the South Agora in perfect conformity with the grid.

On the south side of the Lion Harbor was situated the harbor *stoa* (Figs. 58 and 59). In great likelihood this structure was built in the Hellenistic period. It was 160m long and of the Doric order. Sixty four columns stood along the front side of the *stoa*, and inside, it had thirty shops.

The North Agora was located on the south of the harbor *stoa*. The building must have been constructed in the Classical times but later enlarged in the Hellenistic and Roman eras. In the Classical and Hellenistic periods, the Agora was enclosed on three sides by *stoas*. At that time, the east *stoa* did not exist and this side was closed by a wall. The entrance to the Agora was provided through a *propylon* on the east side. The so-called *agora* temple stood in the middle of the west *stoa*. The temple had the form of a prostyle with four ionic columns on the front face. This four-columned façade has been considered as typical of the Hellenistic period and it is similar to the Zeus Olympios sanctuary at Priene (Akurgal 1973, 211). Behind the North Agora to the west was a small market place erected in the Classical times and surrounded by a number of shops on its four sides.

On the east of the North Agora was the processional road leading from the sixteen-columned harbor gateway to the South Agora. This road attained a length of 100m and a width of 28m. In addition, there were pavements for pedestrians on either side with the width of 5.75m. To the east of the road and right across the east side of the North Agora stood the Ionic *stoa* with shops which was probably constructed in the reign of Claudius (41-54 A.D.).

The gymnasium consisted of a *propylon* and a *palaestra* with five rooms for study. The individual shape of each study and the way these rooms are arranged resemble the lower gymnasium at Priene (Akurgal 1973, 212). Furthermore, the *propylon* leading to the gymnasium consisted of four-columned Ionic prostyle like the one encountered in Priene and Pergamon. Akurgal has suggested that the gymnasium at Miletos conformed to a system characterized by pronounced axiality which was a feature of the Hellenistic period. Therefore, although no inscriptions have given an indication of the construction date, we may draw the conclusion that the building must have been erected in the 2nd century B.C.

The *bouleuterion* was erected at the command of Antiochos Epiphanes, the king of Syria. Thus, its construction date must have been sometime between 175 B.C. and 164 B.C. The building, situated between the North Agora and the South Agora[99], comprised a *propylon*, a colonnaded courtyard and a round auditorium. The *propylon* led to the open courtyard through three entrances. The columns of this structure were of the Corinthian order. A series of *stoas* of the Doric order surrounded the courtyard on its three sides. A tomb dating to the Roman period was placed at the center of this courtyard. In the west part of the courtyard was situated an auditorium which was entered via four main gates. Two other doors also led into the assembly hall at the west side. The people entering the hall reached the upper seats by means of staircases. The wooden roof of the building was supported by four Ionic columns. According to Akurgal (1973, 216), an application of axiality similar to the one in the gymnasium was obvious in the *bouleuterion*. In this respect, the central columns of the *propylon* are in the same line with the middle entrance in order to conform to the axial arrangement. Moreover, the orchestra of the hall also conforms to this symmetrical planning.

The South Agora was planned in the Hellenistic era as a huge colonnaded courtyard measuring 164 x 196m. The *stoas* surrounded the courtyard on its all four sides. The colonnades were of the Doric order and built in three separate blocks all belonging to the same construction period. The east *stoa* consisted of thirty nine

[99] We should note here that in addition to religious considerations while laying out the city, the presence of the council house placed between the North and South Agoras symbolizing the 'democratic' government of the city indicates 'secular' considerations as well. See Hanfmann (1975, 26).

pairs of shops. These were arranged back-to-back in such a way that half was entered from the east and the rest from the west, that is, from the *agora* courtyard. Those opening to the courtyard also had a storage room at the rear. The south *stoa* possessed nineteen shops, some facing inwards framing the courtyard, and some outwards. Its apparent alignment with the gymnasium and the *bouleuterion* suggests that all three *stoas* were constructed in the 2nd century B.C. Nonetheless, the South Agora is in perfect conformity with the general plan of the city drawn in the Classical times.

Further west of the Lion Bay district; on either bank of the Theatre Bay lay the huge theatre and the stadium. The theatre building was situated to the north of the bay and leaned on the only hilly part of the city. It was originally constructed in the 4th century B.C. However, it was enlarged later in Hellenistic and Roman periods. The front face of the theatre had the length of 140m and the height of 30m (in Roman times, the height reached 40m). The building had a seating capacity of over 15000 people. For the sake of efficiency and rationality, the theatre did not conform to the grid pattern of the city. On the south bank of the bay, across the theatre was the stadium. This stadium measuring 191 x 29.5m was built in the 2nd century B.C. in conformity with the orthogonal city layout.

The 'private' zone of the city was reserved for residential quarters. Three residential quarters were divided orthogonally; first at the north end of the peninsula, the second between the Lion Bay and the Theatre Bay, and the third at the southern part of the town. All three were arranged according to a strict grid system. However, there was a one-degree difference in orientation between the northern (i.e. the first two) and the southern quarters. Owing to the presence of such one-degree deviation, it has been suggested that the northern quarters were rearranged based on the preexisting axes dating to much earlier times, whereas the plan of the southern quarter was entirely new in the classical period (Greaves 2002, 108). In addition, the dimensions of the *insulae* at the southern part were much larger than those at the north.

In sum, Miletos reveals one of the earliest implementations of orthogonal planning (or the so-called 'Hippodamian' type) in ancient Greece. It is usually stated that Hippodamos introduced a strictly right-angled geometric pattern to his

hometown in the first half of the 5th century B.C. and 'systematized' this type of urban planning. The grid-plan of Miletos predetermined the future building activities in the Hellenistic and Roman periods as well.

4.4. The Pythagoreans and Pytheos

Like his predecessor, Hippodamos of Miletos, Pytheos' name has been commonly counted among the most prominent architects and town planners of the ancient Greek world. Pytheos, too, was an Ionian architect who worked exclusively in Ionia and the immediate neighboring districts such as Caria in the 4th century B.C. What we know of him is not much but important.[100] Our primary knowledge about his works comes from a very limited number of ancient writers and excavation studies conducted by modern scholars. In this respect, Vitruvius (7. preface12.) mentions his name when he enumerates the Greek writers on architecture who attempted to formulate the principles of their architectural design.

> Afterwards, Silenus published a book on the proportions of Doric structures; Theodoros, on the Ionic temple of Juno which is in Samos; Chersiphron and Metagenes, on the Ionic temple of Diana which is at Ephesus; Pytheos, on the Ionic temple of Minerva which is at Priene …

Although no actual copies of Pytheos' book on architecture have reached our time, we may safely assume that it contained a detailed description of his design with proportions and metrical data to visualize the structure. Furthermore, to clarify the principles of architectural proportions, Vitruvius seems to have made special use of Pytheos' writings. According to Granger (1925, 67), there is no reason to doubt that Vitruvius' definition of architecture closely followed that of Pytheos.

Yet, what was the nature of Pytheos' architectural principles? In the light of our existing knowledge this is not an easy question to answer. However, we should bear in mind that he lived in a political milieu in which Mausolos of Caria, satrap or the governor for the king of Persia, Athens and later even Macedonia attempted

[100] There is a textual inconsistency even in the reading of his name. He must be identical with Phyleos, Phileos, Pythios, Pithios, Pythis and Pythius in various passages of ancient sources.

to establish political influence upon the peoples of Asia Minor. Thus, it seems likely that he was engaged in political matters.[101] In shaping his architecture, he seems to have possessed a many-faceted approach. Accordingly, a well-rounded architect should know about all fields of art and science.[102] It may be suggested here that this integrated idea of the work of art has its origins in the Ionian and Pythagorean philosophy which considers that everything has a common (and 'divine') bond of union that can be comprehended by the same rules observed in one another. In this context, Vitruvius (1.1.12.) explains Pytheos' position as follows:

> But perhaps it will seem wonderful to inexperienced persons that human nature can master and hold in recollection so large a number of subjects. When, however, it is perceived that all studies are related to one another and have points of contact, they will easily believe it can happen. For a general education is put together like one body from its members. So those who from tender years are trained in various studies recognize the same characters in all the arts and see the intercommunication of all disciplines, and by that circumstance more easily acquire general information. And, therefore, one of the old architects, Pytheos, who was the designer of the noble temple of Minerva at Priene, says in his Commentaries that an architect ought to be able to do more in all arts and sciences than those who, by their industry and experience, have advanced individual arts to the highest renown. But that is not in fact established.

According to Hoepfner (2000, 18), Pytheos' statements probably meant that what is most important for an architect is not only the form of each individual object, but also its function and relation to other objects. Thus, the concepts of hierarchy and harmony are also to be found in Pytheos. Indeed, as stated above, we may safely suggest that Pytheos was sensitive to the harmonious relationship between citizens. Accordingly, his system seems to have been derived from the same principles of social order. Hoepfner brilliantly asserts that as law is crucial

[101] Some scholars suggest that Pytheos deliberately preferred the Ionic order over Doric to react against the political dominance of Mainland Greece and Macedonia. For more discussion see R.A. Tomlinson (1963).

[102] Sometimes Pytheos is regarded as a sculptor as well as an architect following the tradition of Rhoecus and Theodoros. See Granger (1925, 68).

for the coexistence of citizens, for Pytheos, a similar order must prevail in all the urban spaces and buildings used by these citizens. In this respect, every building in a city is supposed to be not discordant but in conformity to the overall planning of the city.

In regulating the proportions of architectural elements and their relation to each other, Pytheos seems to have applied geometrical and mathematical principles in his works. Actually, he played a prominent role in formulating and codifying modular rules of design in the 4th century B.C. (Jacobson 1986, 71). Most strikingly, to give order to the form of the most important rectangles (*insulae*) in the planning of new Priene, Pytheos followed the pattern of the Pythagorean harmonic ratios, the *tetraktys*. Furthermore, he created a basic formula for the Ionic capital; the ratio of volute heights to depth and to maximum width is 1:2:3 (Hoepfner 2000, 21).

Pytheos is known to be responsible for the design of Temple of Athena Polias at Priene and the Mausoleum at Halikarnassos. Besides, albeit not proven, the re-planning of Priene and Halikarnassos is usually attributed to him. Therefore, together with the limited ancient literary sources about Pytheos, archaeological field studies at these sites help us to understand his major architectural principles.

According to ancient testimony, it should be taken as certain that architect Pytheos designed and built the Temple of Athena Polias at Priene (Figs. 73 and 74). This structure remains to be the first known Greek temple to have a plan developed systematically on a grid of squares, within which all the structural elements are organized (Jacobson 1986, 70). Joseph Coleman Carter (1983, 6-7) posits that the true relationship between the grid and the Temple is obvious. He clearly states that the combination of a letter and number marked on stones do not refer to a type of block but rather to a location, since a number of different kinds of block have the same combination of letter and number. Consequently, as the careful investigation has revealed, a grid of approximately 3m squares must have been drawn by the architect, lettering the horizontal axis from A to N and the vertical 1 to 10.[103]

[103] Indeed, the Greeks did not use numerical notation, but letters of the alphabet for numbers, so the vertical notation needs to have been A-I which is equivalent of 1-10.

On the other hand, although the precise nature of Pytheos' contribution to the Mausoleum project is subject to debate, his connection with the building should be little doubted since there is no strong evidence to the contrary. In addition to Vitruvius, two other ancient sources, Pliny and an Alexandrian papyrus, also connect Pytheos to the Mausoleum. Pliny in his *Natural History* (36.30) states that the statue of a four-horse chariot was the work of Pytheos himself:

> For above the colonnade there is a pyramid as high again as the lower structure and tapering in 24 stages to the top of its peak. At the summit there is a four-horse chariot of marble, and this was made by Pythis.

However, we can interpret from Vitruvius' statements (7. pref.12) that Pytheos and his collaborator Satyros were the architects who designed the whole building as the tomb monument for Mausolos of Caria (Fig. 61). Strabo (14.2.16.) mentions the monument as follows:

> Then to Halikarnassos, the royal residence of the dynasts of Caria, which was formerly called Zephyra. Here is the tomb of Mausolos, one of the seven wonders, a monument erected by Artemisia in honor of her husband.

However, how is it possible to maintain that the Mausoleum and the Temple of Athena Polias were the works of the same architect despite the obvious differences in both appearance and design? For example, while the Temple at Priene displays almost all the characteristics of an Ionic Greek temple, the Mausoleum has a rather bizarre architectural form which we may label as 'eclectic.'[104] First of all, the architect Pytheos apparently developed a theoretical formula on which he based his entire design. Yet, his theoretical scheme was amenable for adjustment according to the specific requirements of the buildings and demands of the patrons. In other words, as stated previously, his design

[104] This 'unacademic' character of the Mausoleum results from an attempt to combine features from three different civilizations, Lycian, Greek and Egyptian. The high rectangular podium is characteristic of Lycian tomb architecture, above this is the peristyle with Ionic Greek and pyramidal roof is Egyptian. The monument, therefore, was intended to symbolize the fusion of these contributory civilizations and Carian supremacy over them. For more discussion see Geoffrey B. Waywell (1988).

approach was clearly derived from the theory of geometry and mathematics. However, these theoretical preoccupations do not seem to have hindered the architect from exercising the necessary flexibility to accomplish two such different architectural products. On the contrary, these sciences provided him with the ability to think rationally. We can observe a similar kind of theoretical but practicable approach in Pytheos' town planning activities.

Due to Pytheos' obvious association with the Hecatomnid family, we may safely infer that Pytheos participated in the re-planning of Halikarnassos. Mausolos removed the capital city from Mylasa to Halikarnassos in 367 B.C. Although our knowledge about the exact urban layout of ancient Halikarnassos is little, it appears certain that the city had a regular plan (Fig. 60). The city was built on several terraces on the slope to create a visual impact. The restricted archaeological excavations indicate that its grid was sometimes interrupted and adjusted to benefit from the advantages of the site. It can also be suggested that the city was organized according to a certain hierarchy. In this respect, the Mausoleum was the architectural centerpiece and the focal point of the city as the view approaching from the sea was directed towards the monument. However, every urban element was still harmoniously brought together to form a unity within the city (Owens 1991, 71-72).

Overall, like his predecessor Hippodamos, Pytheos also attempted to develop architectural and urban theory based on geometry and natural sciences. His works clearly reflect a theoretical construction which has its origins in preexisting philosophical doctrines and political organizations. The next chapter will aim to better understand the Pytheos' urban theory.

4.4.1. Priene: Pytheos' Urban Form

Priene was a Greek city of Ionia in western Asia Minor. It was situated on the northernmost area of the broad and alluvial Meander Plain (Figs. 62 and 63). To the southeast of the city was Mount Latmos and to the north lay Mount Mycale. The territory of Priene was defined by natural boundaries: the mountain range of Mycale and the Meander River (Rumscheid 1998, 1-2). The built-up area of the city itself

stretched down the slope to the foot of Mount Mycale, and it was divided into four terraces descending to the level of the plain (Radt 1993, 201).

In the very beginning, the ancient city of Priene was first founded in the 10th century B.C by the Carians, natives of Asia Minor. Ionian immigrants who sailed over from mainland Greece took over the settlement with the help of the Ephesians in the 9th century B.C. (Toksöz 1979, 103). Not later than the 8th century B.C., Priene was a member of the Ionian League like Miletos and Ephesos. In this period, the sanctuary of Poseidon which was the religious center of the League, the so-called *Panionion*, was in the territory of Melie, a neighbor of Priene that was located on the northern foot of Mount Mycale. After the decline of Melie, this sacred sanctuary passed over to Priene which took on the task of protecting the *Panionion*. Hence, despite having no political power,[105] Priene was highly respected among other Ionian cities.

Due to the lack of substantial literary testimony and archaeological evidence, it is assumed that Priene was refounded in the middle of the 4th century B.C.[106] However, the question of the relocation of the city continues to be a live discussion since its former location remains unknown. Consequently, there are several hypotheses regarding the original site of Priene. Some scholars suggest that the original site may have been near the ancient mouth of the Meander River, approximately 10 kilometers to the west of the present site. On the other hand, some others posit that Naulochos, Priene's port town, may have been the same city as the former Priene since the place name of Naulochos does not exist in older written sources. Accordingly, the coastal city could have been renamed as Naulochos after the refounding of new Priene with respect to an eponymous hero of the city. In fact, there is reference to Demeter, Kore and also to the hero Naulochos on the South Gate of the new town.[107] One of the most interesting theories pertaining to the

[105] In the early 6th century B.C., Priene for the first and only time had some political influence with Bias, the wise statesman who was one of the Seven Sages.

[106] T. Wiegand and H. Schrader failed to discover any material evidence on the site that could be dated to the pre-Hellenistic era. See Wiegand and Schrader (1904). Recent excavations at Priene under the supervision of Prof. Koenigs are mostly focused on the small finds rather than the overall understanding of its urban origins.

[107] See Hiller von Gaertringen, *Inschriften XIII*, 139, No. 196.

relocation of Priene is brought forward by Nancy Demand who rejects the idea that the city was relocated (Demand 1990, 140-146). According to her, the archaic city of Priene lay under the present ruins. Demand refers to ancient writers such as Strabo and Pausanias who give accounts of the city's past. On the one hand, Strabo (14.1.12) discusses the location with no suggestion that there had been a former Priene at another site:

> After the outlets of the Meander comes the shore of Priene, above which lies Priene, and also Mount Mycale, which is well supplied with wild animals and with trees. This mountain lies above the Samian territory and forms with it, on the far side of the promontory called Trogilian, a strait about seven stadia in width.

Like Strabo, Pausanias (7.2.10) also subscribes to the view that Priene had never moved. In this respect, Demand refers to Pausanias who states that as a matter of pride, the people of Priene had never abandoned their city:

> On the one hand, Priene, though it suffered very severely at the hands of Tabalus the Persian, and afterwards at the hands of Hiero, a native, is still [a city] of Ionia. On the other hand, the inhabitants of Myus abandoned their city in consequence of the following occurrence.

In addition to the literary sources, Demand also points to the archaeological evidence: a fragment of Attic red-figure vase found in the excavation site was dated to the end of the 5th century B.C. (Demand 1990, 143). According to Demand, this find not only suggests the continuous occupation of the site but also raises the question of whether other evidence of an earlier period might have escaped discovery so far.[108]

If we are to accept Demand's position, then it may possibly be stated that the urban layout of Priene continued as a legacy from the earlier archaic period to later periods since it is not likely that the older city was entirely ruined and swept away in order to create free space for founding the new city in the late Classical era.

[108] There has been nearly 100 years of excavation at Priene. Thus, it seems unlikely that other evidence of earlier periods may have escaped discovery. If the present location of the city was occupied from the 10th century on, one would expect more evidence.

Yet, excavators T. Wiegand and H. Schrader's hypothesis of relocation has received approval from recent scholars.[109] According to this now more commonly accepted view, the new Priene was laid in the mid-fourth century B.C. in the late Classical period. The foundation of this new city is commonly attributed to Mausolos[110], the king of Caria who died in 354 B.C. or the Athenians[111], and even Alexander the Great[112] is considered in this context. It is known from the inscriptions that Priene represented an agricultural community with some artisans and shopkeepers (Bankel 1991, 1). The population of Priene should be around 5000 (Bankel 1991, 1; Houtopoulos 2000, 44). However, the number of the citizens who had the right to vote is approximately 1500 about one third of the whole population since the women, children and slaves were excluded from political affairs and the census. After all, Priene was an 'autonomous'[113] and independent *polis* with no dynastic ruler or a king.

As the newly founded city stands well-preserved and relatively free from later occupation, it displays one of the most illuminating examples revealing the nature of the 'Hellenic' grid-plan. It appears that the urban layout of Priene followed a strict geometrical scheme from the very beginning of its foundation (Fig. 65). Each of the four main streets of the city running parallel to each other from east to west, namely Theatre Street, West Gate Street, Athena Street (leading to the Sanctuary of

[109] The removing of the city is mainly based on the hypothesis that the receding shore line created health problems for the people in a coastal town because of creation of marshes that would have been fertile ground for mosquitoes, and therefore for malaria.

[110] Bean and Cook suggested that the relocation of some Greek cities such as Priene, Erythrae and Cnidos was connected to the "Hecatomnid Plan" which was spawned by Mausolos in order to create a network of cities to achieve the Hellenization of Caria. Therefore, they gave credit to the view that Mausolos had considerable influence over the city of Priene. For further discussion see Bean and Cook (1952, 171-185).

[111] F. Hiller von Gaertringen who was the editor of the inscriptions from the site suggests that the Athenians were responsible for the relocation. See Hiller von Gaertringen, (1906, xi).

[112] The evidence for this is Alexander the Great's dedicatory inscription of Temple of Athena and the temple's integral part in the original urban layout. For further discussion see Wiegand and Schrader (1904, 45) and Schede (1934, 97-108). Yet, the inscription only says that Alexander dedicated the temple and nothing else. It may have been a gesture by the people of Priene to placate him.

[113] For further discussion regarding the concept of '*autonomia*' see Hansen (1995).

Athena Polias) and Spring Gate Street [114] corresponds more or less to a terrace on the slope (Fig. 64). Transverse streets crossing the main streets at right angles are connected to each terrace by means of staircases (Fig. 77). These linear streets with varying dimensions according to their degree of importance constitute a grid pattern. It is commonly believed that the town planning of Priene was the work of Pytheos who was also the architect of the Temple of Athena. Inspired by Hippodamos of Miletos, Pytheos organized the city according to Hippodamian principles. Although the grid pattern does not seem very appropriate to be imposed on such a sloping site, there must have been practical reasons other than solely love of geometry for this choice: Obviously, the allotments shaped by the strict geometry of the grid predetermine the future building activities and urban development for many years. Furthermore, Hippodamian principles include the distribution of public and private zones and regulate the visual and proportional relationships of these zones.

The central area of the city which constitutes the most crucial public zone in the urban layout runs from north to south through the whole settlement where several sanctuaries and public buildings are situated (Figs. 67, 68 and 69). At the city center lies the *agora* (Fig. 71). In the mid 4th century B.C. when the town was being laid out, a space covering two entire *insulae* and two halves was reserved for the *agora* where all the public activities, such as festivals, political debates and social assemblies were held. At that time, there were no monumental structures in the *agora* of Priene. However, a large rectangular stone structure was found in the center of the square which is believed to be the foundation of an altar dedicated to Hermes (Rumscheid 1998, 79). The development of the *agora* in Priene took place within the context of a master scheme (Radt 1993, 207).

Over time, this *agora* was surrounded by a series of *stoas*.[115] At the end of the 3rd century B.C., the North Stoa, the so-called "Sacred Stoa", was built on a second terrace elevated three marble steps above the earlier North Terrace. This earlier terrace stood six long steps above the ground in a similar manner (Fig. 72). By the

[114] Their names are given by the German excavators according to their major features.

[115] For further information concerning the development of *agora* and construction phases of *stoas* see Coulton (1976) and also Koenigs (1993, 381-397).

middle of the 2nd century B.C., the North Stoa was extended westward. The overall structure frames the open space of the *agora* on the north side with forty nine Doric columns. To the west of the stepped passage and next to the Bouleuterion, a row of fifteen rooms of almost identical size runs at the rear side of the North Stoa and reaches its west end. The partition walls of these rooms are set against an earlier layer of plaster on the rear wall. This indicates that this wall can be a part of an earlier North Stoa (Rumscheid 1998, 71). From a fragment of inscription with few letters preserved, it is suggested that Ariarathes, a member of Cappadocia's royal family, was the donor of the structure. Hence, the northern *stoa* must have been finished by 130 B.C.

Right across the eastern extension of the North Stoa is the so-called Street Stoa. It apparently receives its name from its location on the south side of West Gate Street to the east of the *agora*. It appears that its construction became necessary as a counterpart to the eastern extension of the North Stoa. Thus, it could have been constructed shortly after the eastward extension of the North Stoa in 130 B.C.

The central open space of the *agora* is framed by *stoas* on its south, west and east sides, too.[116] The East Stoa comprises a right angle with the Street Stoa to the east of the *agora*. Since the former displays details in workmanship similar to the Street Stoa, the East Stoa is supposed to be constructed at the same time as the Street Stoa. On the other hand, the southern and western *stoas* with uneven and less skilled details seem to have been finished in the late Classical period. Thus, the South and West Stoas lined the square with the earlier North Stoa in the early Hellenistic period (Rumscheid 1998, 79).

Therefore, although they have different construction phases, all the *stoas* and the large open space of the *agora* follow the lines of the overall geometric urban layout with only slight alterations. In this way, they fit the proportional requirements and consequently they pave the way for future building activities.

[116] The main open space of the *agora* with the dimensions of 75.63 x 46.35m was extended approximately 3m towards the north. This fits the ratio of 3:2 which Vitruvius recommends for the design of a Greek *agora*.

The Sanctuary of Athena Polias which was dedicated to the patron deity of the city-state (*polis*) constituted the sacred zone in the planned settlement.[117] Due to its importance, the sanctuary was the largest *temenos* in Priene. It was situated to the northwest of the *agora* and could be reached by a variety of ways. First of all, the *propylon* of the *temenos* opened on Athena Street. Besides, it was reached either by a stepped passage from the West Gate Street (Fig. 75) or by another stepped path rising at the west end of the *agora*. The sanctuary is located on high ground above its surroundings where it is visible from a far as the focal center of the city (Rumscheid 1998, 106). Like the *agora*, this sacred precinct covers the space of two entire and two halves *insulae*. The sanctuary itself was designed at the same time as the laying out of the new Priene, but it was completed phase by phase:[118] first the temple and the altar and then a terrace with a *stoa* on the south, followed by a small temple-like structure (*naiskos*) on the northeast and the *propylon* on the east. The temple of Athena began to be built in the middle of the 4th century B.C. However, the variation of style and slight differences in ornamentation are taken as evidence that the building of the structure was extended over a long time. It appears that its construction took over three hundred years of continuous work from the very beginning of the city's refoundation to the time of the Emperor Augustus (Rumscheid 1998, 131-132). As stated earlier, the design of the temple is attributed to Pytheos, the same architect who was the responsible for the overall city plan of Priene. Pytheos wrote the architectural prescriptions for the temple which were later quoted by Vitruvius, the famous Roman author on architecture. Thus, the ideas of Pytheos have survived until today, inspiring investigations on early urban theory and form.

The ground plan of the temple of Athena Polias is an integral part of the overall geometry of the city planning in Priene. The temple itself is brilliantly and conspicuously connected to the network of the city as the southern corner columns of the structure stood in an axial position with the corner points of the *insula*. In other words, the southern elevation of the temple runs from west to east on the same line as the *insulae* while its western and eastern elevations extend along the north-

[117] For further information see Koenigs (1983, 134-176).

[118] For the history of research on this monument see Carter (1983).

south lines. This obvious conformity of the temple to the principles of the urban scheme indicates that Pytheos, like his predecessor Hippodamos, belonged to the Pythagorean school.[119]

Apart from these public and sacred sections of the city, the road network too conveys that the grid has ability to adapt itself to a sloping site on which it is imposed. In this respect, where necessary, almost every passageway running from south to north contains a staircase to connect sloping land in the topography of the chosen site. Moreover, many *insulae* need to have high retaining walls. This indicates that the grid-plan in Priene is not blindly composed of a set of rigid orthogonal lines as the elements of a conceptual design but it also shows the three-dimensional capacity to conform to the actual site.

Beside its rationality and practicality, the grid-plan also holds a certain degree of hierarchy. In this regard, the width of the streets in the city was determined according to the importance of their function. Thus, main streets running east-west are wider than residential ones running south-north. For example, the West Gate Street leading to the *agora* is the widest measuring 7.10m in width (Fig. 76). The Spring Gate Street flanking the *agora* to the south has a width of 5m, while narrower passages at right angles with the main streets of the city ranged in width from 3.5m to 4m (Rumscheid 1998, 30).

The grid conceptualizes the harmonious relationship between the citizens of Priene where, in principle, all citizens living in the city were given almost equal plots of land for housing (Figs. 66 and 78).[120] In this regard, the streets running in the four cardinal directions determine a pattern of regular and rectangular house blocks of identical size – the *insulae* – measuring 35.30 x 47.10m. These *insulae* are divided into eight equal plots of 23.55 x 8.83m for dwellings with slight adjustments based on their location on the site. This indicates that a sort of uniform housing mentality existed in the settlement which was simultaneously shaped by the social fabric and also reinforced it.

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[119] The proportions of the Temple of Athena (1:2), of the public area of the *agora* (2:3) and of the blocks of private residences (3:4) conform to the pattern of *tetraktys* which is the symbol of Pythagorean perfect proportions in geometry and music.

[120] Surely, there were differences due to the situation and gradient of these lands. See Radt (1993, 203) and also Hoepfner (1986).

The idea of a 'typical housing plan' is usually attributed to Hippodamos. Miletos and Piraeus were planned by Hippodamos with regard to *isonomia* where all citizens had equal political rights (Hoepfner 2000, 19). The inhabitants of Priene adopted the modest houses of the early Classical and Classical periods in the 4th century B.C. rather than the contemporary luxurious houses of their own time elsewhere. However, archaeological evidence reveals that in the 3rd century B.C., in the Hellenistic period, they adopted larger and more luxurious houses which indicate a change in living conditions.[121] This became first evident in the reception halls – *andron* – of the residences. For example, House No.8 was extended by adding a larger reception hall which was beautifully decorated with concentric pebble mosaics (Rumscheid 1998, 101). Yet, these later arrangements did not destroy the grid pattern which had the capacity to accommodate change and enlargement.

Only few zones and structures fall outside the geometric pattern of the city.[122] These were the *acropolis* –Teloneia, – the fortification wall, and the *stadion*.

First, the *acropolis* which was named after the Prienian hero Telon was situated at the top of the steep hill and used for only defensive purposes. There were neither prestigious buildings like temples nor residential ones but only a military garrison. Thus, it was not integrated to the city's social life and not even settled permanently.

Second, the non-geometric fortification wall surrounding the entire city did not follow the grid pattern of the settlement. Although it was constructed at the same period as the initial laying out of the city, it conspicuously forms a contrast to the regularly laid plan. It appears that the irregular course of the fortification was determined by concerns of defense so that the steep mountainside would contribute to the city's fortification. Hence, it followed the course of irregular cliff which enhanced the height of the built wall rendering it more inaccessible (Rumscheid 1998, 27).

[121] See Özgenel (1997).

[122] Although the *Bouleuterion* constructed in around 200 B.C. and the Sanctuary of Demeter constructed in the 3rd century B.C. do not follow the direction of *insula*, they follow the orientation of the city's grid plan.

The third structure that did not follow the direction of the grid was the *stadion* which was built in the 2nd century BC. Yet, there is quite a practical reason fully explaining its layout beyond the grid: because it had to provide a smooth running track with the length of 119m, the building was designed in conformity with natural topography of the site.

In sum, Priene reveals one of the best examples of the Greek city with the grid-plan. Refounded in the middle of the 4th century BC in the late Classical period, it clearly indicates that the grid pattern conspicuously continued from the archaic and classical times of Greece to later periods. This also shows the rational and practical nature of the geometric scheme since it allows alterations to meet the functional, spatial and topographic requirements.

CHAPTER 5

CONCLUSION

We may safely claim that the strict geometrical scheme with straight lines crossing each other at right angles has been one of the commonest urban patterns in ancient Mediterranean cities. In this respect, although implemented in different times and in miscellaneous social, political and even religious contexts, it is still possible to observe that orthogonal town planning was effectively used almost everywhere in the Mediterranean region and beyond: in Egypt and Mesopotamia long before the emergence of the Greek city, the *polis*, in mainland Greece and Asia Minor, in Eastern Anatolia, in Italy and Sicily, on the Aegean and Mediterranean Islands, along the Black Sea coasts, and the shores of North Africa.

However, the question that the thesis raises at this point is how did the ancient Greek grid-plan differ from the formally similar others in the Mediterranean world? It is shown that there is no reason to doubt that the "East" certainly had the knowledge of geometry long before the Greeks. The Egyptians and the Mesopotamians, for instance, stood high on the scale of mathematical sciences. But they used this knowledge more as a tool or device for technical practicality. Similarly, the principles of systematic and geometric planning certainly existed in Egypt and Mesopotamia. In this respect, the society within the city was organized according to these principles. It is suggested that the Egyptian town with the orthogonal layout built for pyramid workers at Kahun presented all the indications of a well-regulated society which was typical of the Middle Kingdom. Nevertheless, since we still do not possess evidence to the contrary, it may be claimed that the Egyptians hardly developed any theoretical formula for the 'ideal' order of society and its reflections on the physical environment. Instead, they made use of geometry pragmatically to establish their towns "in the simplest and quickest way."

At the other end of the spectrum, the thesis reveals that the Greek city may be regarded as the product of a theoretical idea. As such, the Greeks offered a

'rational' order for society which was supposed to be reflected on urban space. According to textual evidence, Hippodamos of Miletos was the 'first' who theorized and rationalized preexisting orthogonal planning. He developed a tripartite system in which the society was divided into three classes mirrored by the physical division of the city into three parts. Therefore, unlike any predecessors he obviously pursued a theoretical approach in town planning. That is to say, his town planning principles were based on a theoretical geometric construction which profoundly influenced later town planners, too.

Yet, how did this early Greek urban planning theory based on orthogonal geometry evolve? Clearly, it did not emerge all of a sudden in the 5th century B.C. The origins of the Greek grid-plan were rooted in the political and philosophical developments that occurred primarily in the Early Iron Age, sometimes called the "Dark Age," and in the Archaic Age. However, we should keep in mind that many basic elements of Greek culture were inherited from the earlier Bronze Age. In this respect, the Minoans and Mycenaeans are commonly regarded as the ancestors of the Greeks. In a sense, the cultural life continued from the Bronze Age to the Archaic Age. In terms of town planning too, the regular arrangement of the palace complex at Knossos with the huge courtyard in the middle and the sophisticated organization of the spaces around it might have also influenced the development of the Greek city. Nevertheless, one of the most fundamental contributions of the Minoans and Mycenaeans to the later Greek culture was to be the establishment of the sailing routes in the Mediterranean which also paved the way for the colonization movements.

Indeed, the Greek world witnessed two distinct migration movements: the first was the so-called Ionian migrations which occurred around the 11th century B.C. in the Early Iron Age, and the second in the Archaic Age between the 8th and the 6th centuries B.C. resulting in the spread of 'Greek identity' throughout the Mediterranean. Unfortunately, we do not know much about the precise nature of the Ionian migrations. According to recent views, different ethnic groups including both the locals and the immigrants from different regions united and founded the Ionian cities. It is clear that these were the ones who created (and carried) the

'Ionian spirit' which led to the flourishing of natural sciences and philosophy in Asia Minor.[123]

After the Ionian migrations, due to a variety of economical and political factors, the Greeks once more launched a huge colonization movement in the Archaic Age. It is suggested that the formation of the Greek city-state, the *polis*, followed the colonial enterprise in this period. Many institutions of the *polis* were shaped after the colonization movements started. Although this is tenable to a certain extent, it is safer to state that colonization contributed much to the organization of the *polis*, and transversely the experiences accumulated during the process of the *polis* formation contributed much to the political 'ideals' of colonies. For example, the notions of justice and equality which had long existed in Greek thought had their ultimate physical expression in colonies. From the beginning the colonists started on the same level with the others "on fair and equal terms." This allowed them to realize their 'egalitarian' ideals which they carried with themselves from their *metropolis*. In fact, the land both inside and outside the city walls was divided via the comprehensive use of geometry and the resulting 'regular and equal' allocations were distributed among the settlers based on a 'fair' lottery.

However, according to the findings of the thesis, the grid-plan was not devoid of spiritual motivation and inspiration. The ancient Greeks believed that the organization of society and the urban environment was indispensable to the good way of life. In formulating the rules for such an organization, they observed the rules in nature. In other words, everything had to be organized according to the laws observed in nature, because observing nature would help reveal the 'design of gods', the 'higher order of the *cosmos*.' In this universal design, nature itself is subject to a governing law and justice prevailing in the *cosmos*. If one power in nature is stronger than the other, disorder inevitably emerges. Like nature, political life is also part of the cosmic order; society is held together by harmonious relationships such as "equal sharing" and "friendship." Indeed, the order of *cosmos*

[123] Actually, this is only an assumption. In his talk on the Ionian migrations, Yaşar Ersoy (May 2008, Hacettepe University) asserted that the Athenian activity in these migration movements cannot be always correct as the single explanation. Instead, he indicated that several groups may have participated in establishing Ionian cities. It is also suggested that the intellectual 'spirit' was formed in these cities by them.

is essentially the harmonious relationship between the 'equals.' In this regard, the thesis shows that the early Ionian and the Pythagorean philosophy attempted to understand this 'higher' structure of the *cosmos*. In search of this 'higher' goal, as discussed in some detail, the first Ionian natural philosophers sought the 'rational' explanations of natural phenomena and studied observable regularities in nature. The Pythagoreans, on the other hand, dealt with the harmonious relationship between the components of the universe. According to them, the human soul imitates the *cosmos* and there should be a harmony and balance between mortals (the 'limited') and immortals (the 'unlimited'). Most strikingly, such intellectual pursuits, as revealed in the thesis, led to the knowledge of geometry because the order of the *cosmos* was most visible in 'rational' geometry. As Aristotle (*Metaphysics*, 1.987b) puts it, "geometry is the knowledge of the eternally existent." In fact, mathematics was at the center of all intellectual activities in the 6th century B.C. and geometry became an integral component of early Greek philosophy. Both the Ionian *physiologoi* and the Pythagoreans were intensively involved with the mathematical sciences, geometry in particular. In both philosophies, there was no distinction between geometry and corporeality. However, geometry was not only a device for practical purposes, but it also had its own underlying theory. Most importantly, it provided a link between the physical environment and the *cosmos*.

Some Greek architects and town planners were undoubtedly influential intellectuals who were actively engaged in natural sciences and philosophy. Therefore, it is not surprising to see that the theoretical knowledge of the *cosmos* inspired Greek architects and planners. As brilliantly stated by McEwen (1993, 130), "all of Western thinking was first grounded in architecture and the legitimacy of architecture rested on the preservation of that memory." According to ancient sources, the 'first urban theorist,' Hippodamos, being a *meteorologos*, contemplated a great deal on the heavenly bodies. Thus, it is likely that he also tried to observe geometric unity and harmony in nature, and then, applied these rules in his theory on society and its physical space. Vitruvius mentions that Pytheos, another prominent Greek architect and supposedly also a town planner, wrote a book on architecture. In this now lost book he may have theorized his architectural ideas and principles based on the harmonious scale of proportions. The concepts of harmony

and geometric proportioning which were common to both Hippodamos and Pytheos suggest a connection between these two architects and the Pythagoreans. Ancient writers also support this view to some extent. However, we cannot be so sure whether the architectural theories of Hippodamos and Pytheos were directly inspired by the Pythagorean doctrines. Nevertheless, it is obvious that a certain degree of 'rational,' geometric and theoretical preoccupation existed in these architectural approaches.

Yet, were these abstract political and philosophical theories actually reflected upon the urban fabric in any particular time and region throughout ancient Greek history, and if so, how? McEwen (1993, 130) claims that "the archaic Greek world was a world that appeared through the things people made." In a similar manner, we may expect to trace the revelation and subsequent concretization of such abstract theories in the urban patterns of Greek cities, too.

First of all, when we look at the grid-plans of Greek cities such as Megara Hyblaea, Metapontum and Olynthos, the political notion of *isonomia* becomes immediately apparent. The thesis has shown that an obvious correlation existed between 'egalitarian' planning and the orthogonal pattern. For many scholars, Olynthos' town planning displayed an ultimate expression of the Greeks' 'democratic' ideals as geometrically equal land plots were allotted to every citizen of the city. However, to be on the safe side, it should also be reminded that connecting cultural ideas with the physical environment has certain pitfalls which may sometimes prove too speculative. Urban patterns can be interpreted in different ways from different points of view. For instance, to give a more recent example, the grid has served the symbolic needs of some of the most absolute governments in China and Japan (Kostof 1991, 99-102). In the early Greek colonies, too, the grid, far from being a 'democratic' device employed to assure an equitable allotment of property to all citizens, was also the means of perpetuating the privileges of the landowners and reinforcing a territorial aristocracy. Therefore, we should avoid a single dominant interpretation.

Nevertheless, it is possible to observe that the evolution of the Greek grid-plan was shaped about the same period as the political formation of the *polis* and the development of early Greek philosophy. According to an interesting recent

theory formulated by R. Hahn (2001), the technical developments in architecture and town planning may have inspired the developments in early philosophy. This could also be the case. Given this possibility, it would be unreasonable to ignore interrelations between the physical environment and social dynamics. Some mutual conceptions may not be hard to find in both. The concepts of 'rationality' and 'contemplation of perfection,' for example, have been associated with the abilities admired by philosophers. These were also found in the organization of society which must have inspired the urban layout based on orthogonal geometry. Of course, archaeological and textual evidence is of the greatest importance and absolutely necessary to be able to interrelate the two. Without concrete evidence, any conclusion that we draw will be imaginative and speculative. Yet, as the selected cases of this thesis have pointed out, we possess adequate material evidence to draw (or at least suggest) a network of interrelations between the socio-political and philosophical dynamics and the evolution of the grid pattern.

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FIGURES

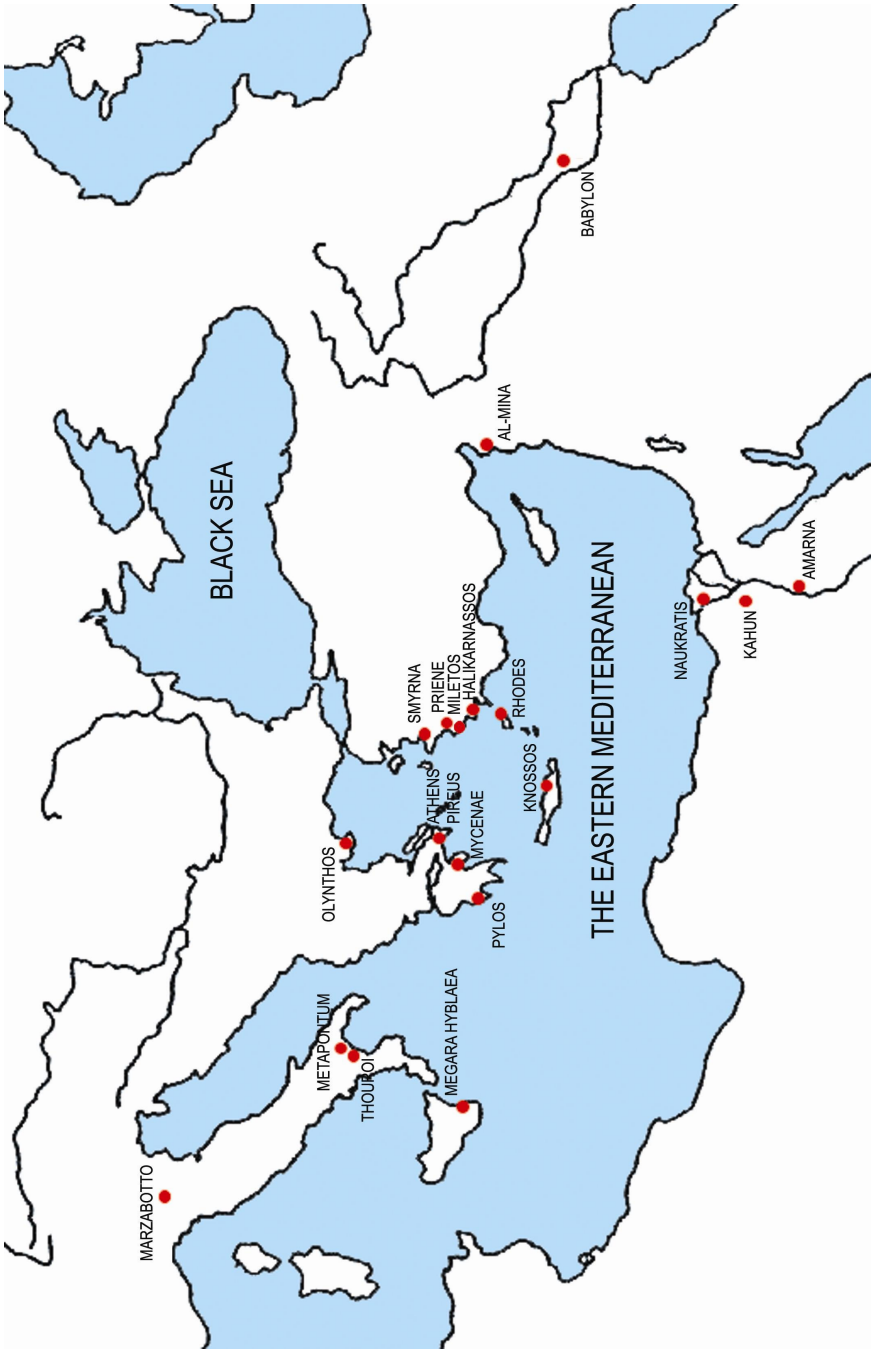
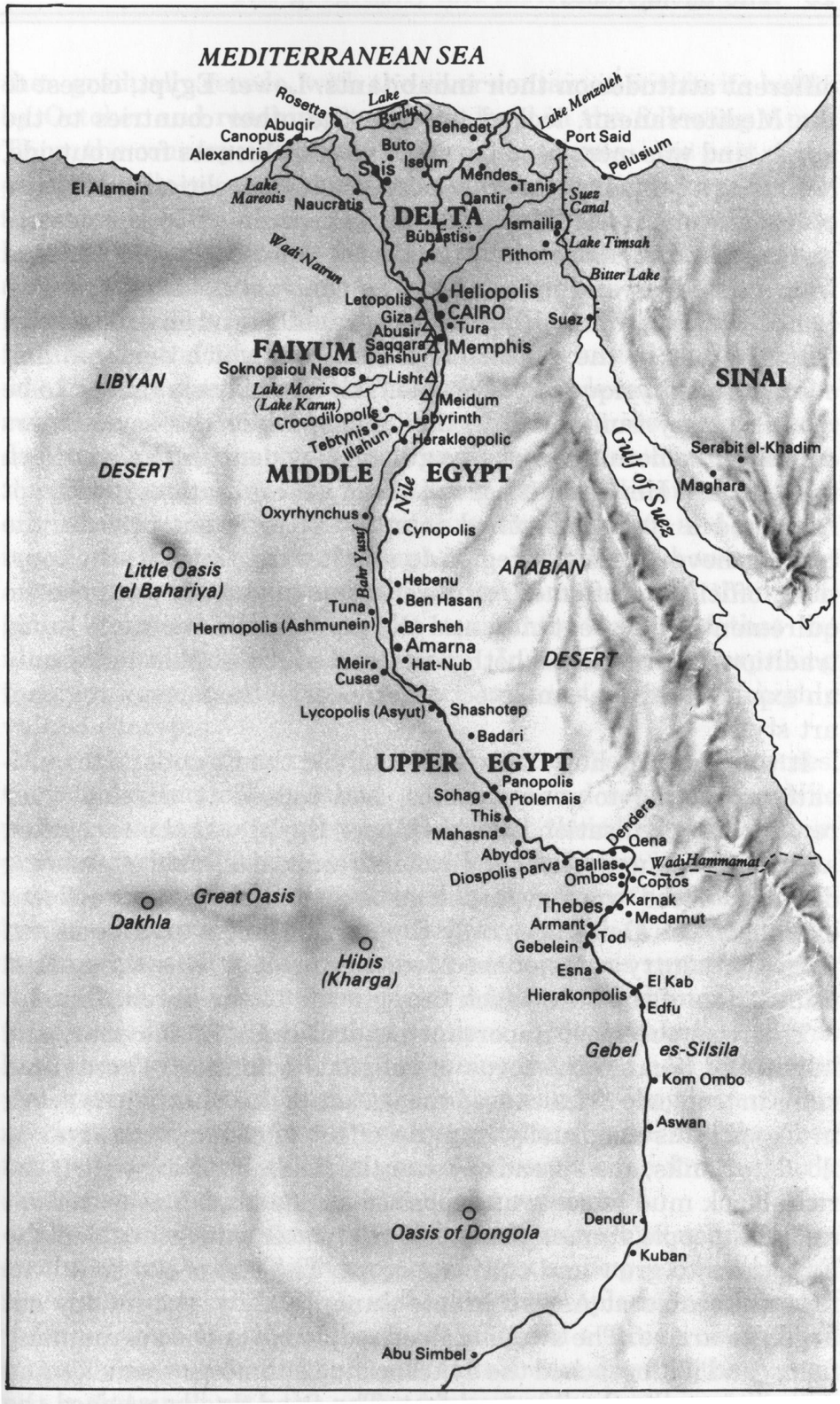
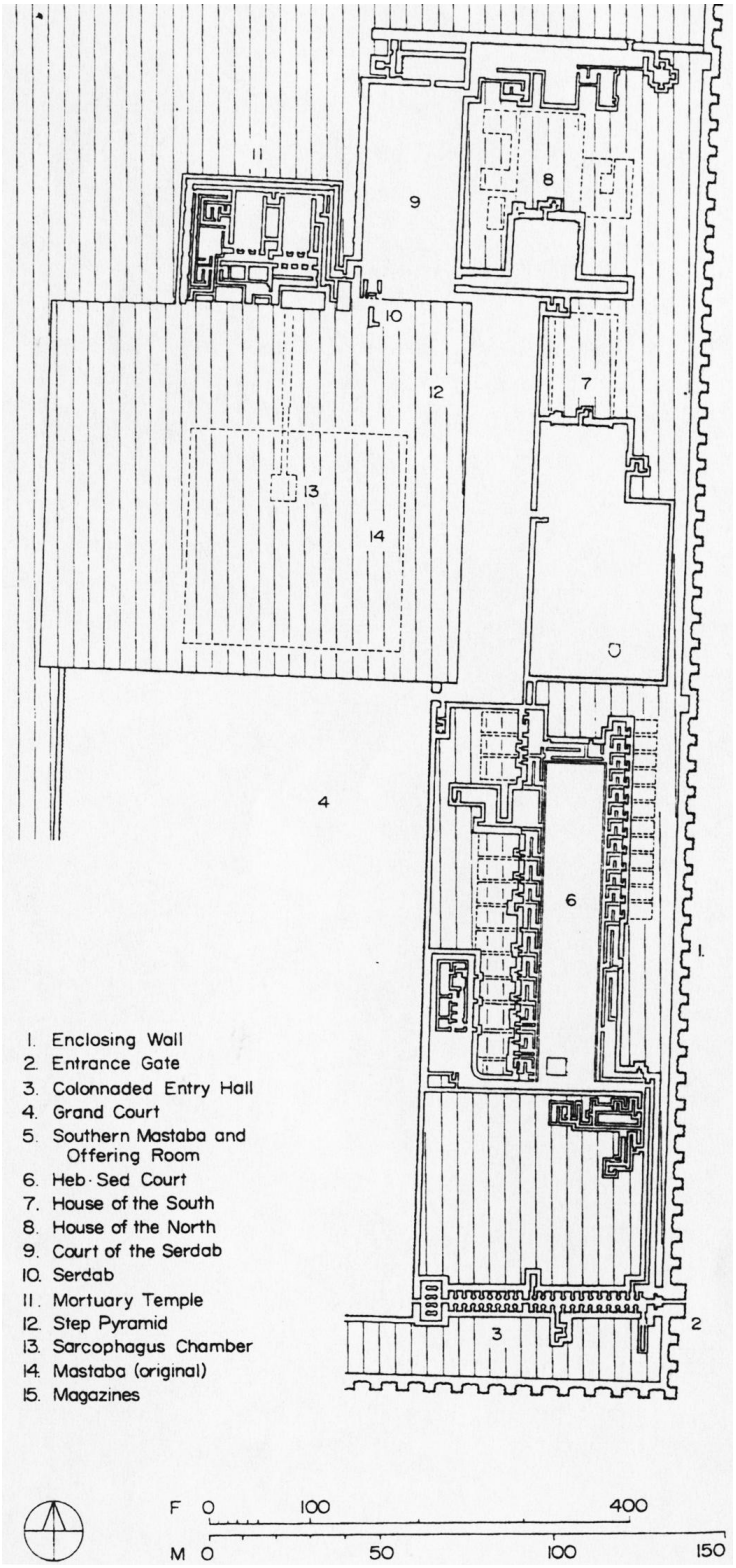


Figure 1. Key Map Showing Locations of the Sites Mentioned in the Text



Source: David, A. Rosalie. 1986. *The Pyramid Builders of Ancient Egypt*. London and New York: Routlege, figure 1, p. 15.

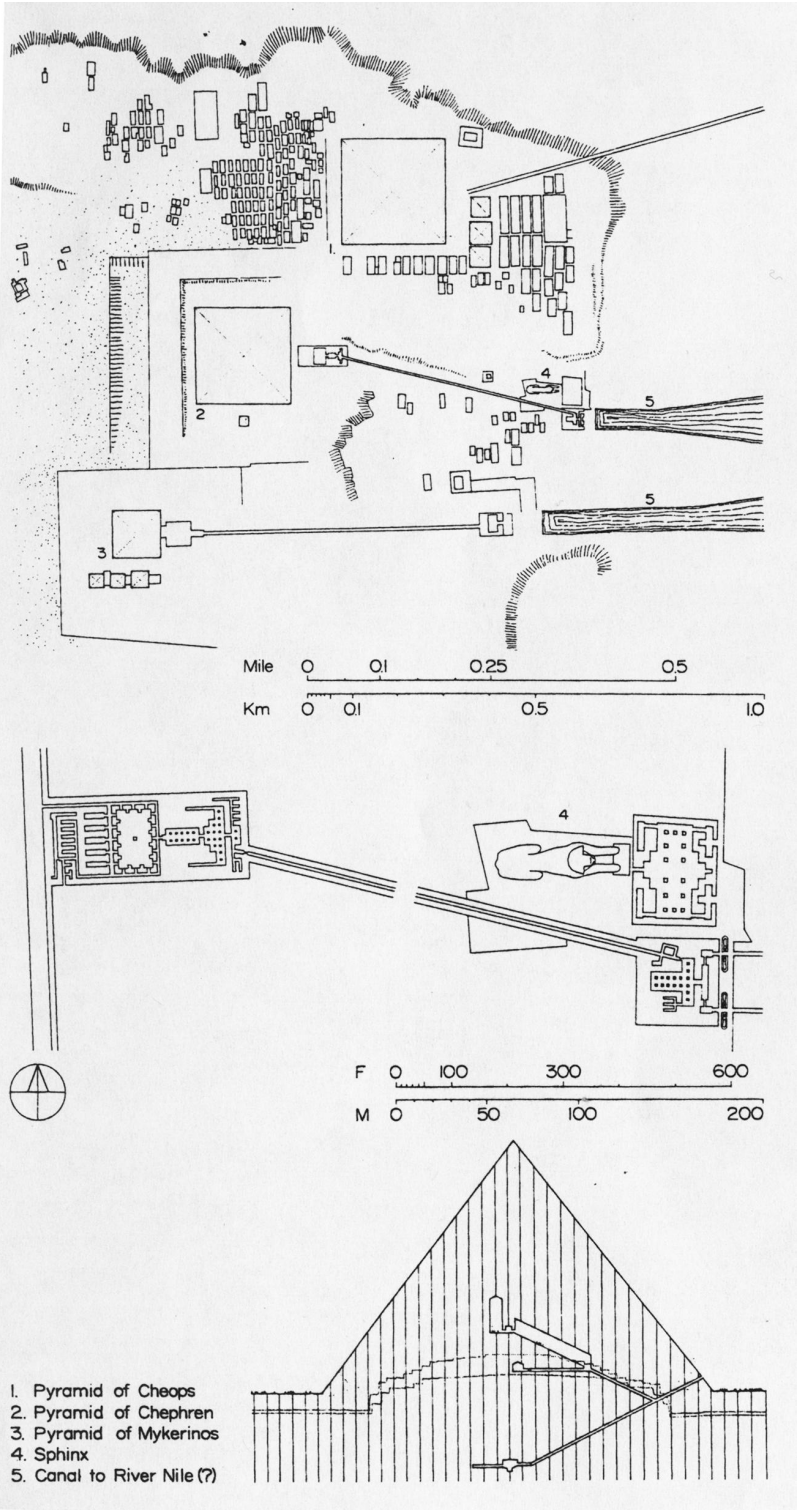
Figure 2. Map of Egypt



Source: Kostof, Spiro. 1985. *A History of Architecture: Settings and Rituals*. New York: Oxford University Press, figure 4.5, p. 72.

Figure 3. Plan of the Mortuary Complex of Djoser, Saqqara

Figure 4. Views of Stepped Pyramid, Saqqara

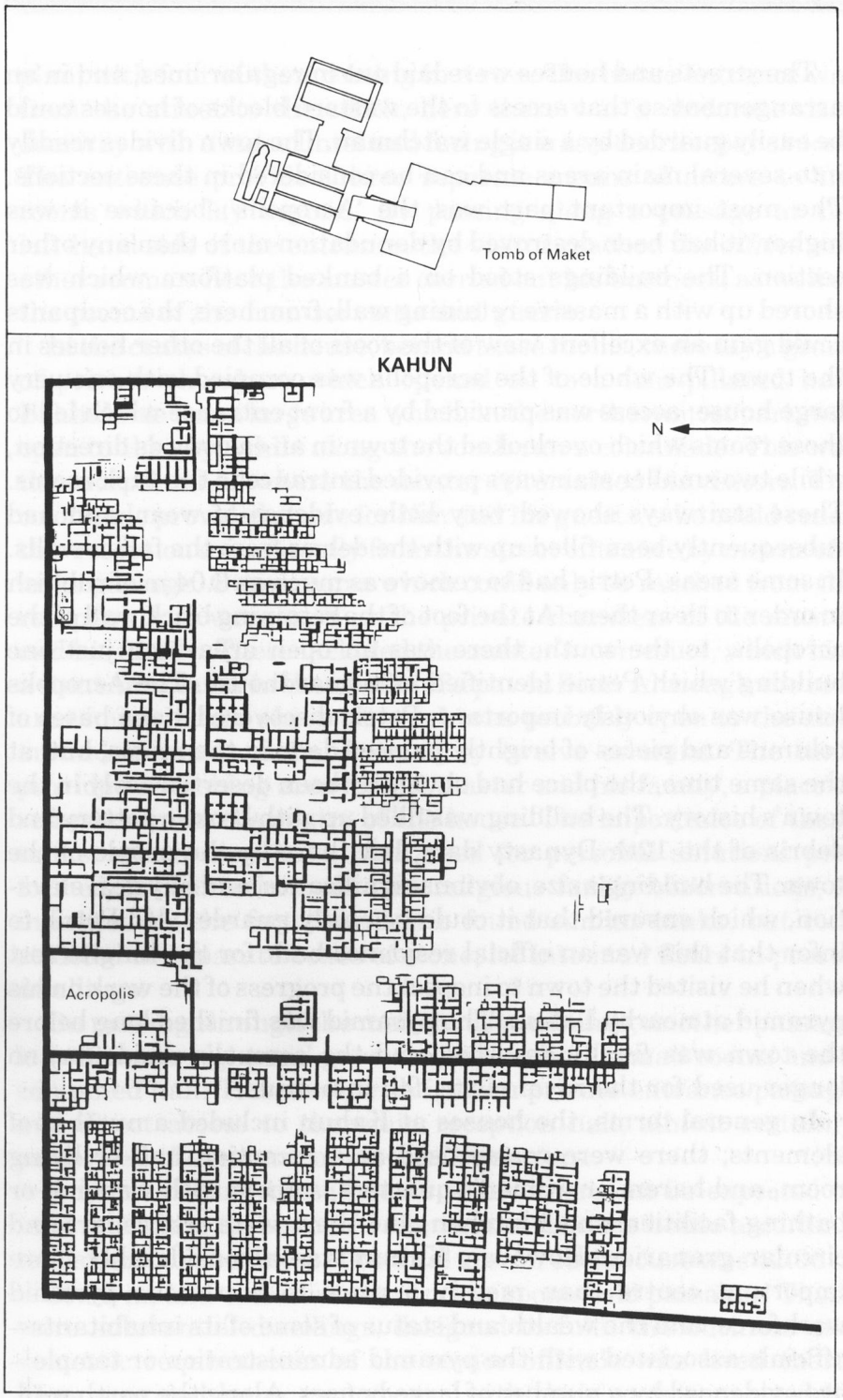


Source: Kostof, Spiro. 1985. *A History of Architecture: Settings and Rituals*. New York: Oxford University Press, figure 4.11, p. 65.

Figure 5. Pyramid Group at Giza (general plan, the sphinx with the attached temple of Harmakhis, section through the pyramid of Cheops)

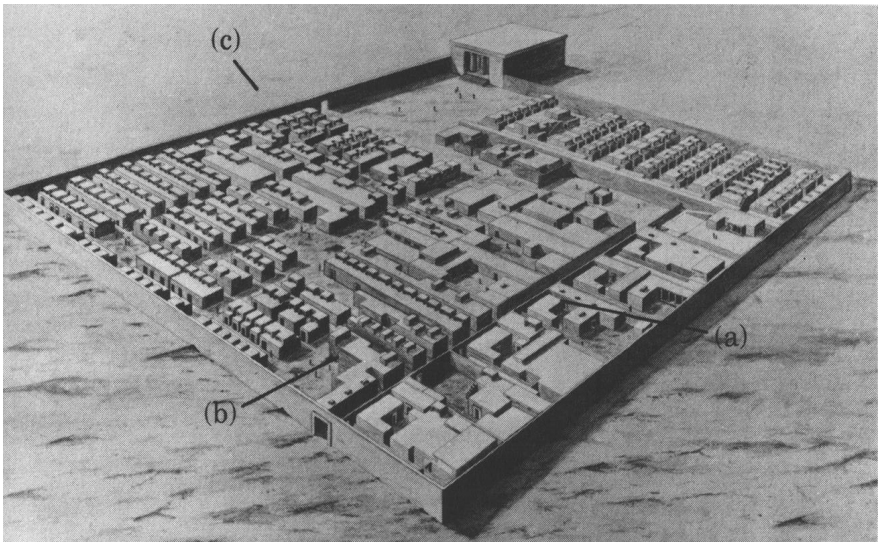
Figure 6. View of Pyramid Group, Giza

Figure 7. View of the Sphinx



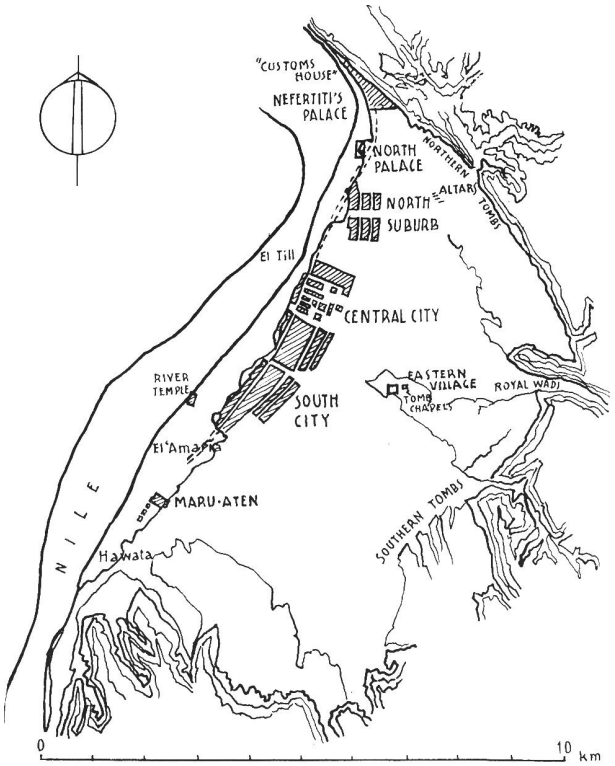
Source: David, A. Rosalie. 1986. *The Pyramid Builders of Ancient Egypt*. London and New York: Routlege, figure 4, p. 105.

Figure 8. Plan of Kahun



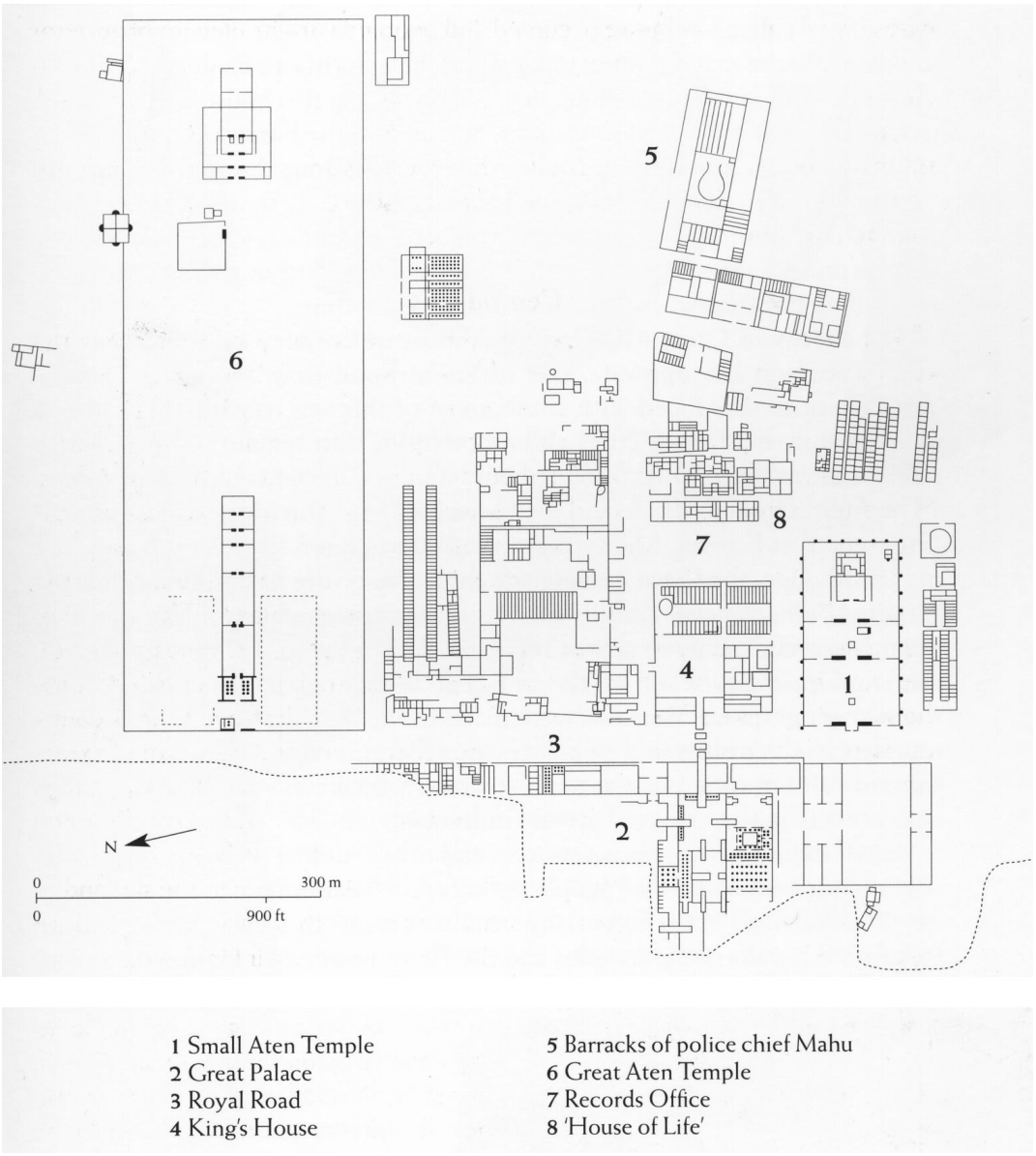
Source: David, A. Rosalie. 1986. *The Pyramid Builders of Ancient Egypt*. London and New York: Routlege, plate 5.

Figure 9. Reconstruction Drawing of Kahun (a: workmen's houses, b: Acropolis, c: Large Villas)



Source: Badawy, Alexander. 1968. *A History of Egyptian Architecture*. Berkeley and Los Angeles: University of California Press, figure 45, p. 77.

Figure 10. Map of Amarna

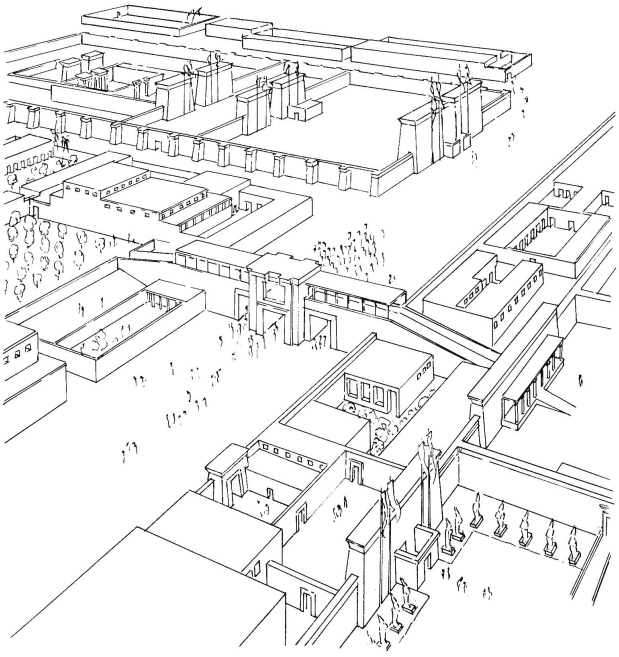


Source: Reeves, Nicholas. 2001. *Akhenaten: Egypt's False Prophet*. London: Thames&Hudson, p. 123.

Figure 11. Plan of the Central City, Amarna

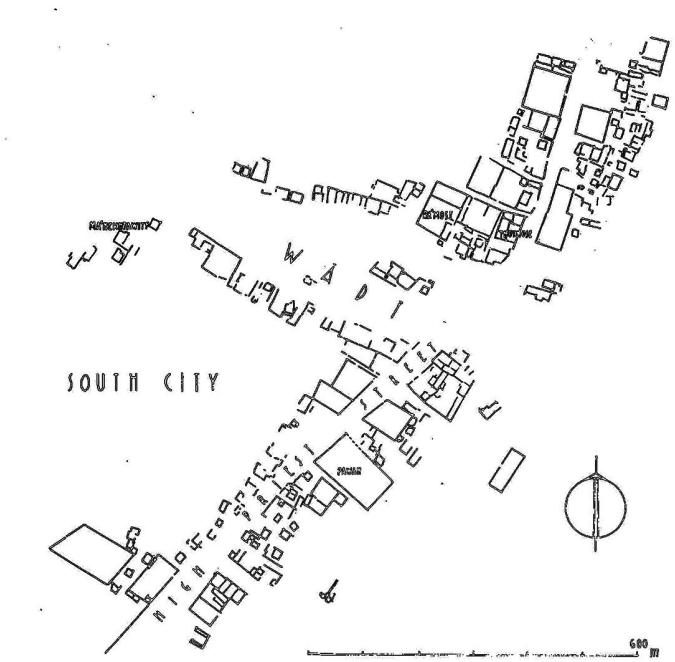
Source: Reeves, Nicholas. 2001. *Akhenaten: Egypt's False Prophet*. London: Thames&Hudson, p. 27.

Figure 12. Aerial View of the Central City, Amarna



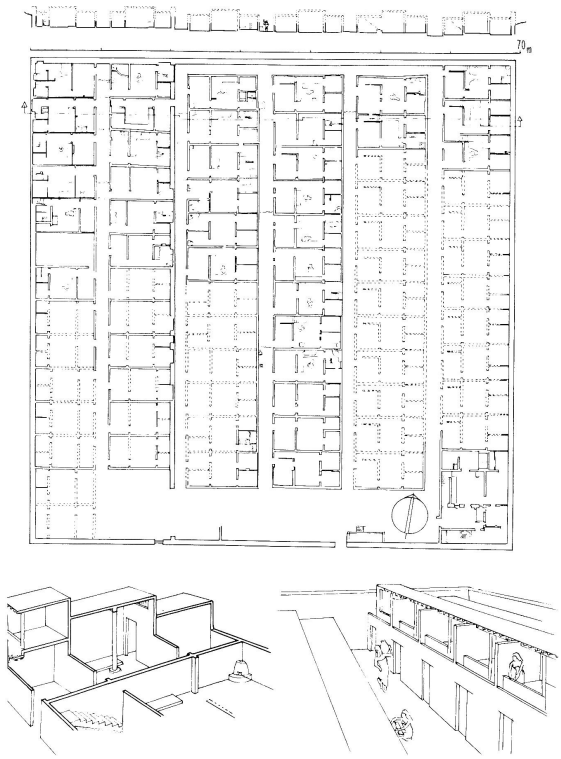
Source: Badawy, Alexander. 1968. *A History of Egyptian Architecture*. Berkeley and Los Angeles: University of California Press, figure 46, p. 79.

Figure 13. Reconstruction Drawing of the Central City, Amarna



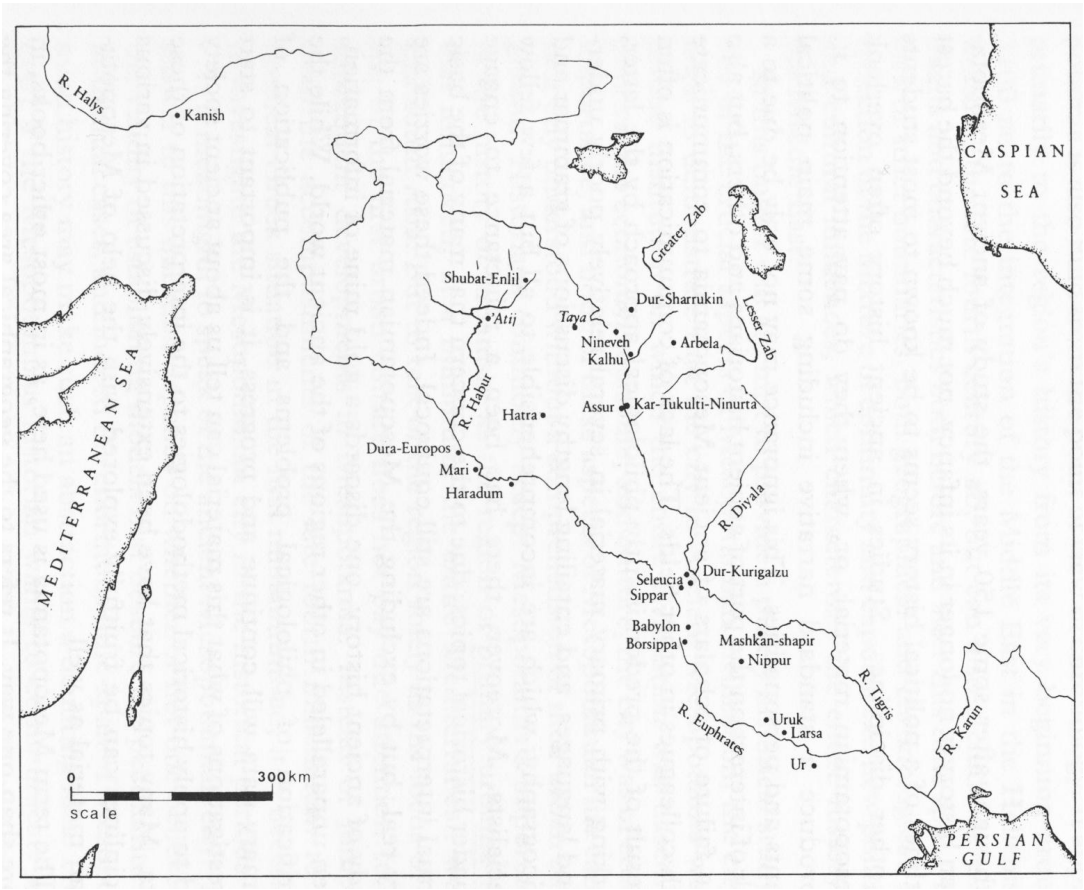
Source: Badawy, Alexander. 1968. *A History of Egyptian Architecture*. Berkeley and Los Angeles: University of California Press, figure 30, p. 56.

Figure 14. Plan of the South City, Amarna



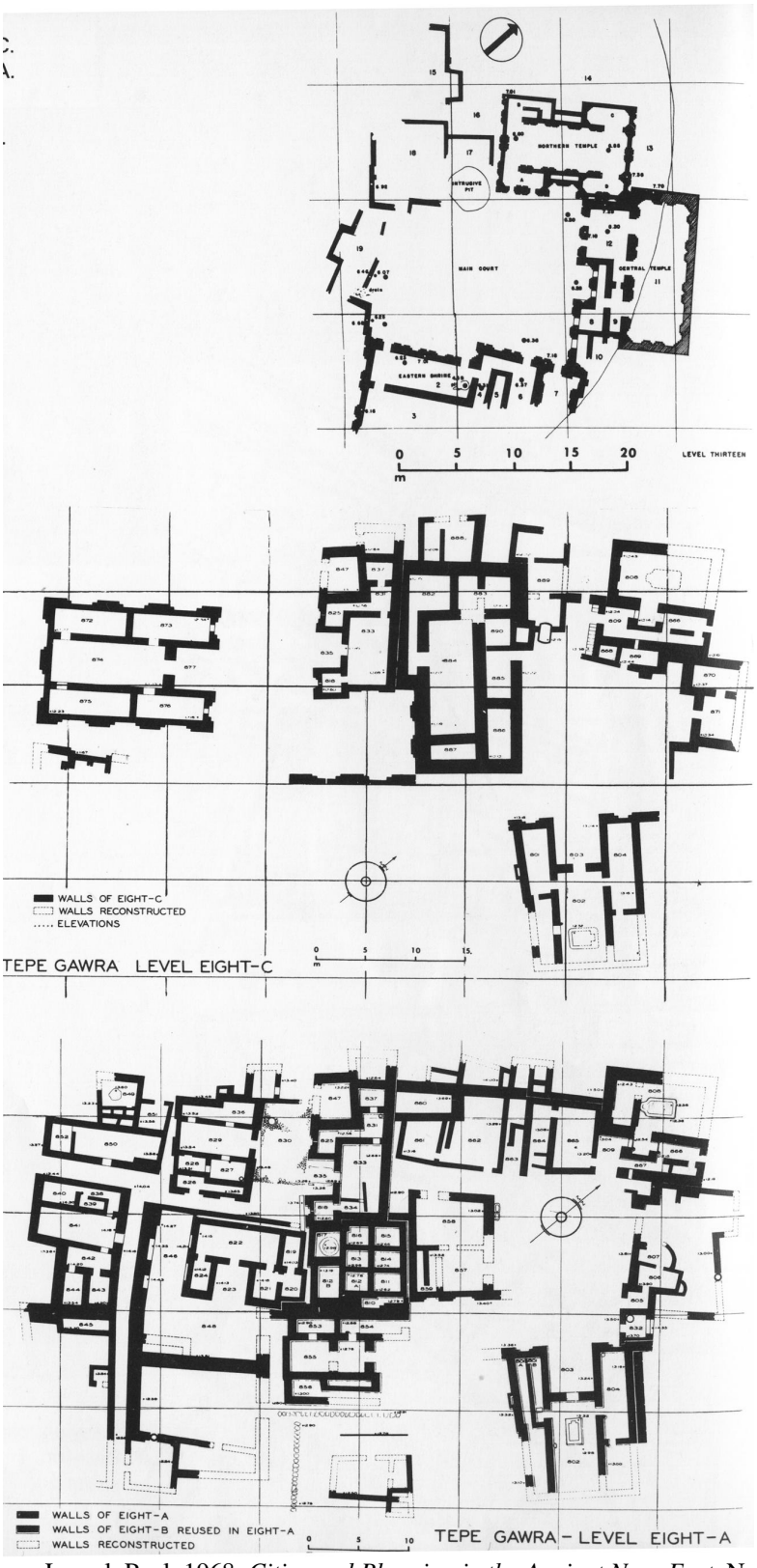
Source: Badawy, Alexander. 1968. *A History of Egyptian Architecture*. Berkeley and Los Angeles: University of California Press, figure 66, p. 111.

Figure 15. Plan of the Workmen's Village, Amarna



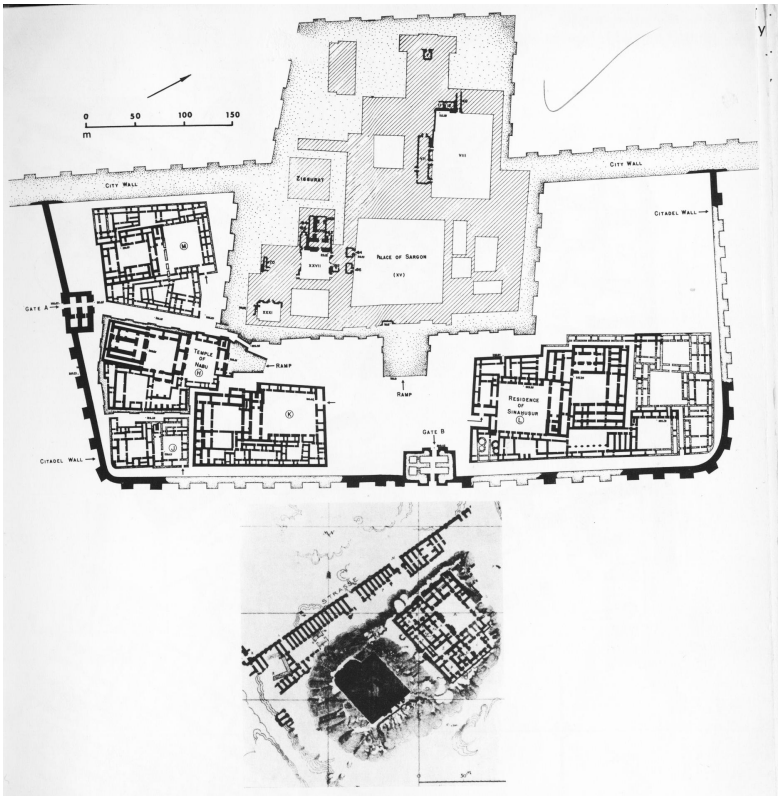
Source: Van De Mieroop, Marc. 1999. *The Ancient Mesopotamian City*. Oxford University Press, p. ix.

Figure 16. Map of Ancient Mesopotamia



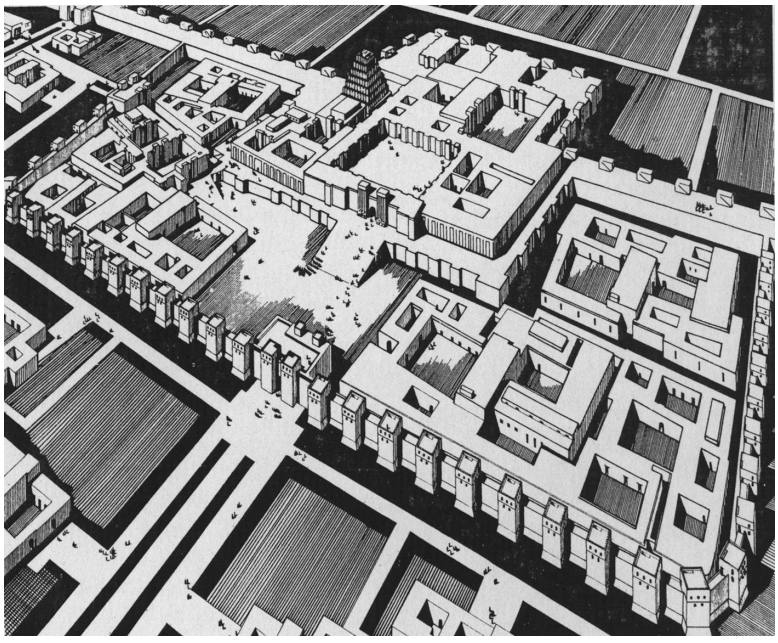
Source: Lampl, Paul. 1968. *Cities and Planning in the Ancient Near East*. New York: George Braziller, plate 37,38,39.

Figure 17. Plan of Tepe Gawra



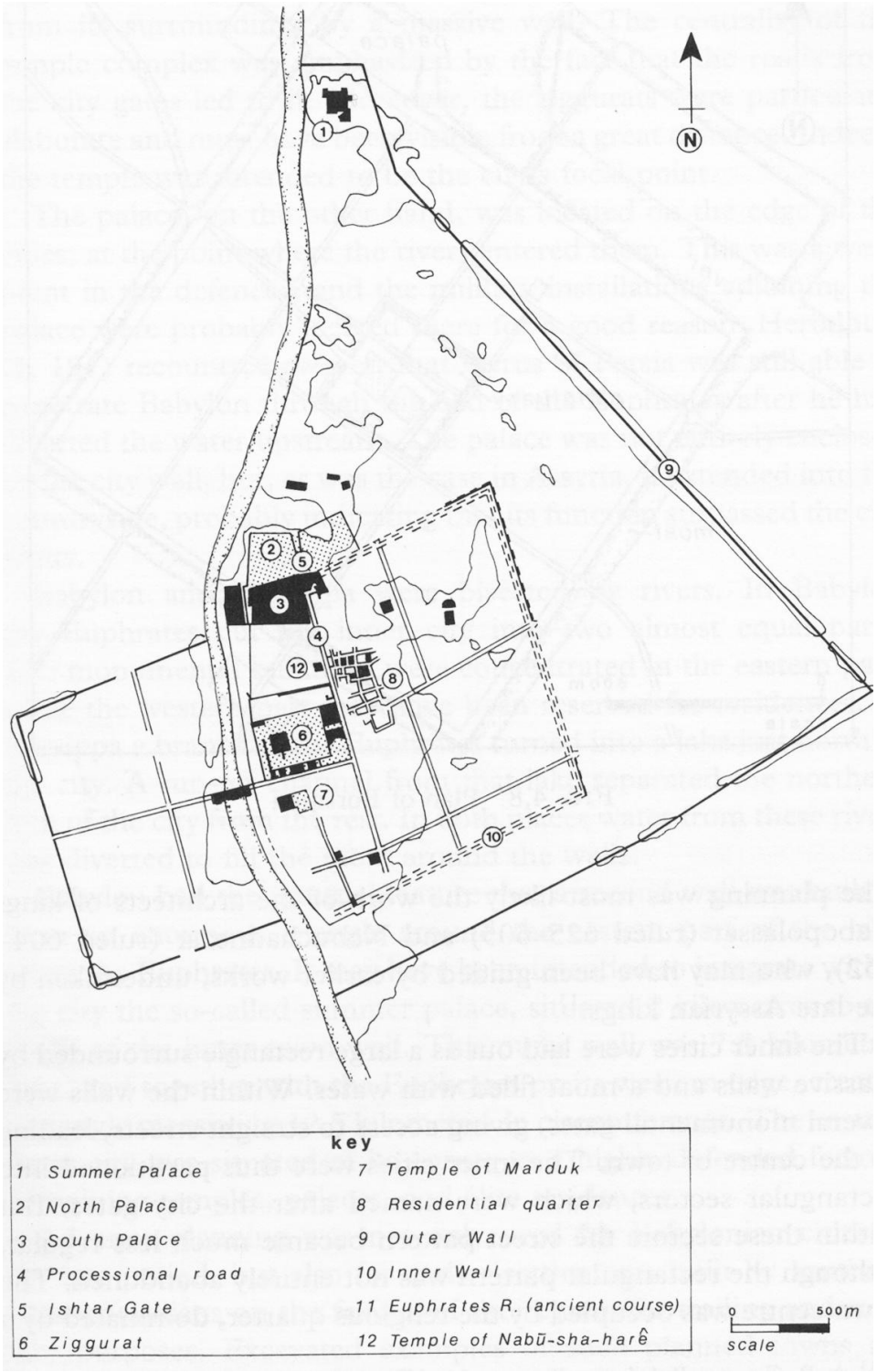
Source: Lampl, Paul. 1968. *Cities and Planning in the Ancient Near East*. New York: George Braziller, plate 50.

Figure 18. Plan of the Citadel, Khorsabad



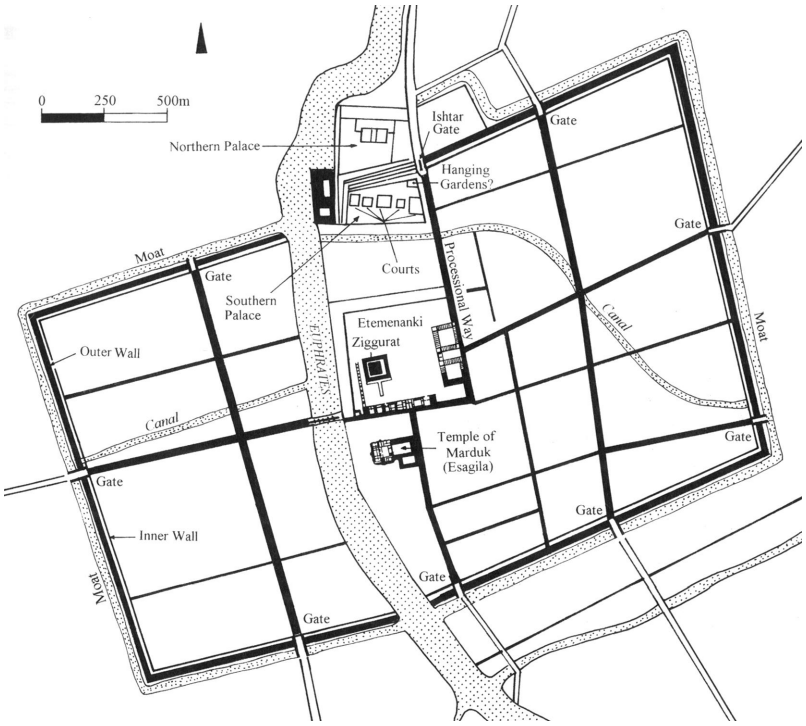
Source: Kostof, Spiro. 1985. *A History of Architecture: Settings and Rituals*. New York: Oxford University Press, figure 3.25, p. 65.

Figure 19. Reconstruction Drawing of the Citadel with Royal Palace, Khorsabad



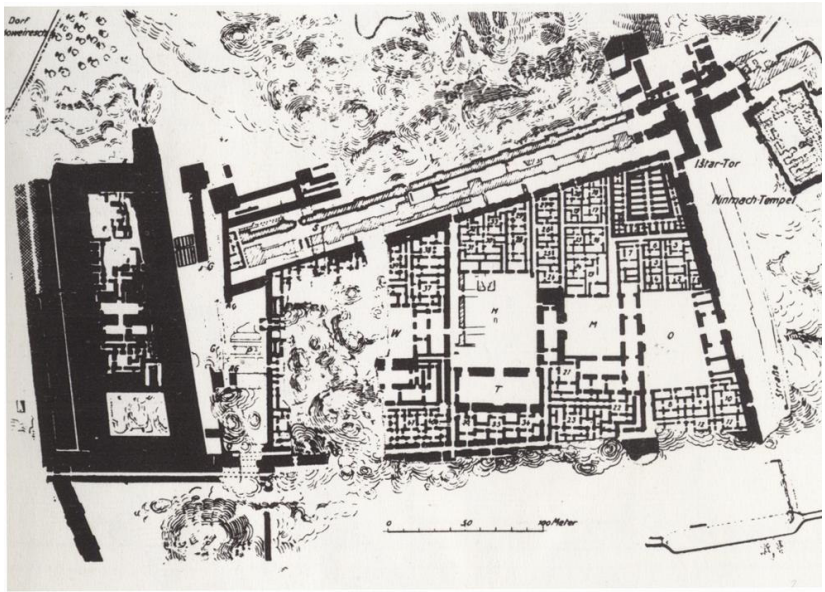
Source: Van De Mieroop, Marc. 1999. *The Ancient Mesopotamian City*. Oxford University Press, figure 4.7, p. 87.

Figure 20. Map of Babylon



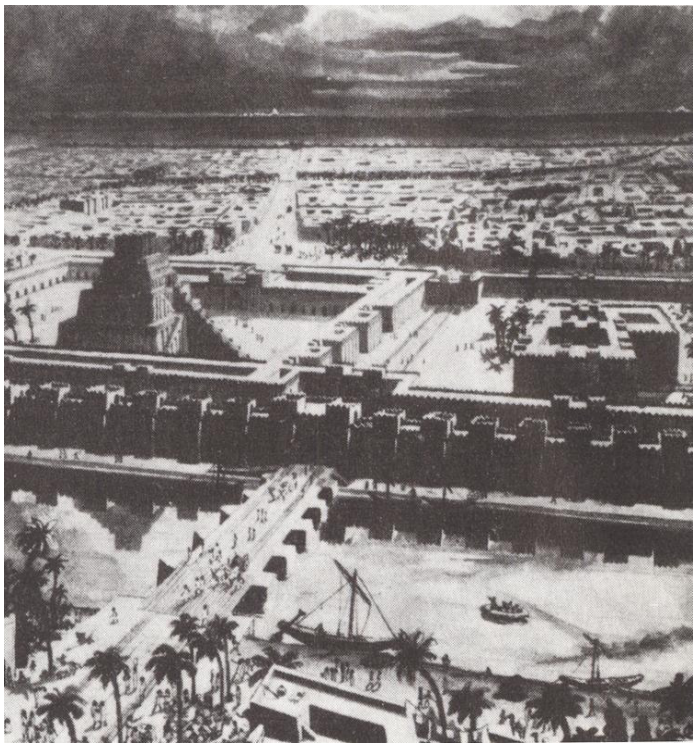
Source: Gates, Charles. 2003. *Ancient Cities: The Archaeology of Urban Life in the Near East Egypt, Greece and Rome*. London & New York: Routledge, figure 10.12, p. 183.

Figure 21. Schematic Plan of Babylon



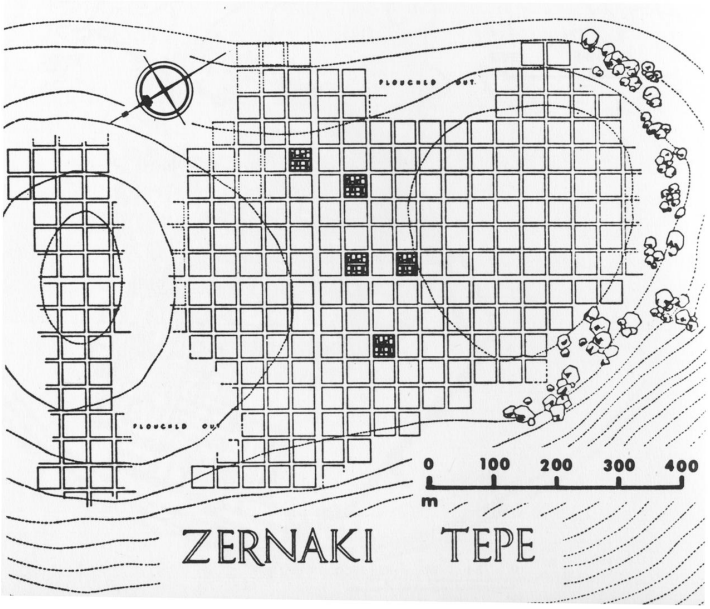
Source: Lampl, Paul. 1968. *Cities and Planning in the Ancient Near East*. New York: George Braziller, plate 34.

Figure 22. Plan of the Southern Citadel, Babylon



Source: Lampl, Paul. 1968. *Cities and Planning in the Ancient Near East*. New York: George Braziller, plate 35.

Figure 23. Reconstruction Drawing of Esagila and Etemenanki, Babylon

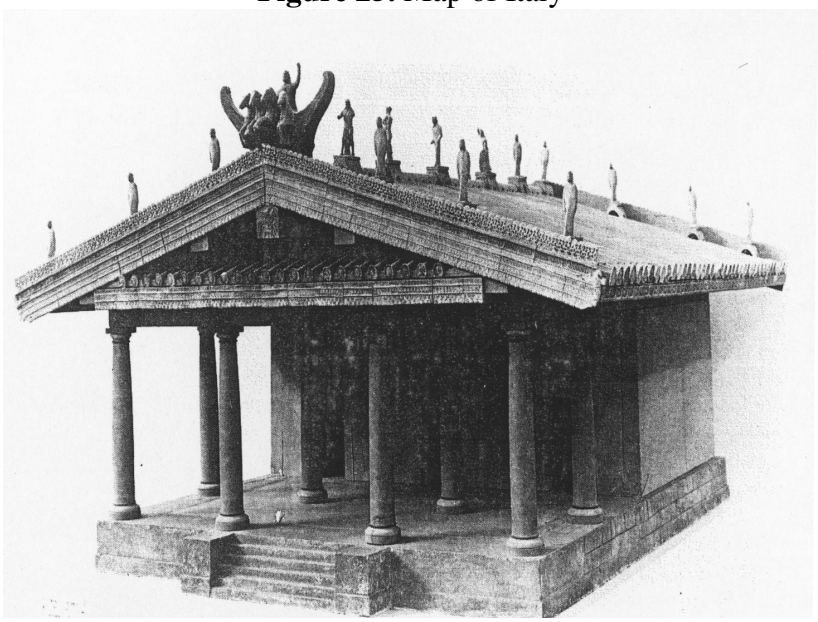


Source: Lampl, Paul. 1968. *Cities and Planning in the Ancient Near East*. New York: George Braziller, plate 149.

Figure 24. Plan of Zernaki Tepe, Eastern Anatolia

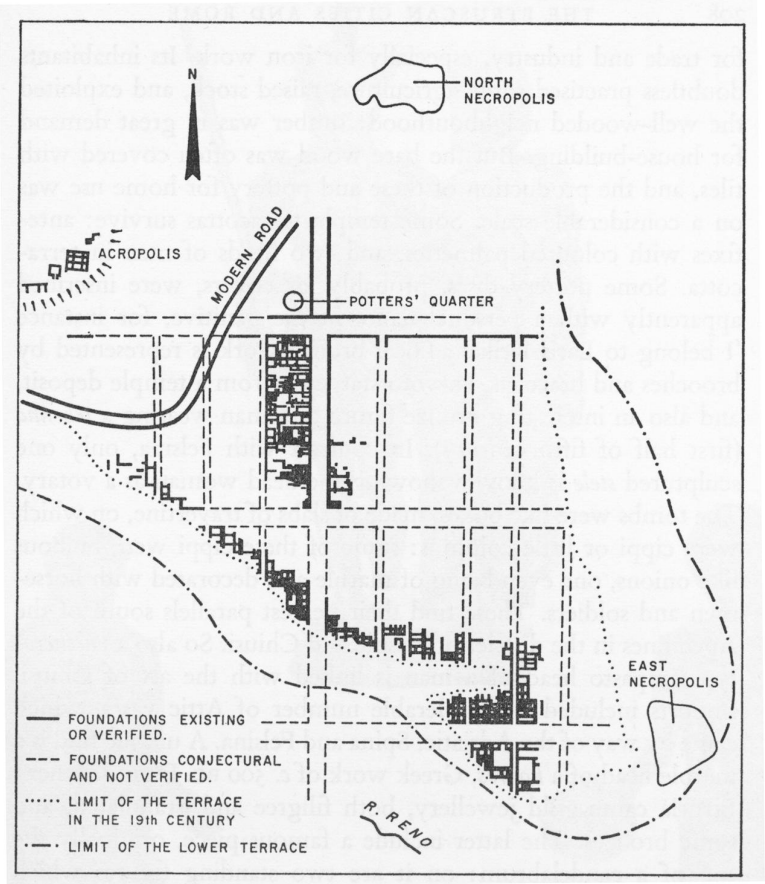
Source: Ward-Perkins, J.B. 1974. *Cities of Ancient Greece and Italy: Planning in Classical Antiquity*. New York: George Braziller, map 4.

Figure 25. Map of Italy



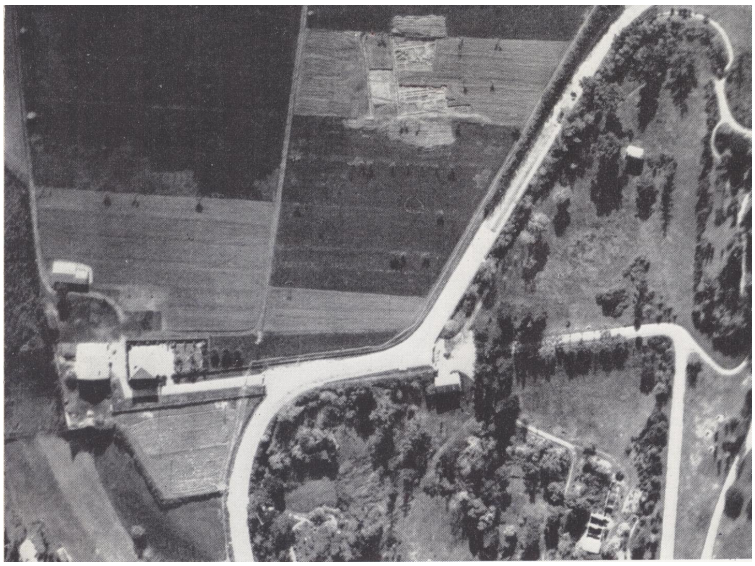
Source: Kostof, Spiro. 1985. *A History of Architecture: Settings and Rituals*. New York: Oxford University Press, figure 6.18a, p. 130.

Figure 26. Reconstruction Drawing of an Etruscan Temple (according to the description of Vitruvius)



Source: Scullard, H.H. 1967. *The Etruscan Cities and Rome*. Ithaca, New York: Cornell University Press, figure 24, p. 207.

Figure 27. Plan of Marzabotto

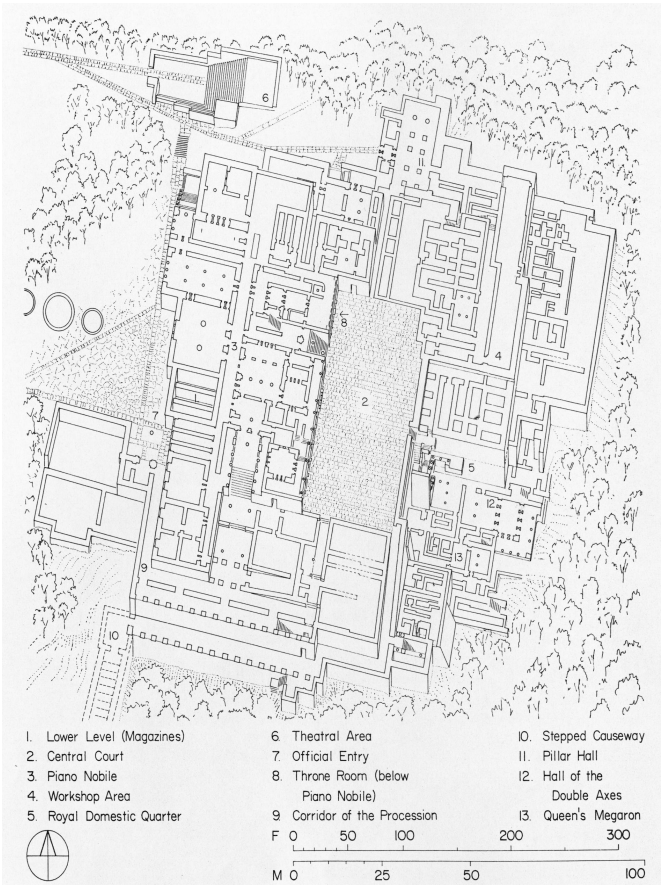


Source: Scullard, H.H. 1967. *The Etruscan Cities and Rome*. Ithaca, New York: Cornell University Press, plate 94, p. 200.

Figure 28. Aerial View of the North-West Part of Marzabotto

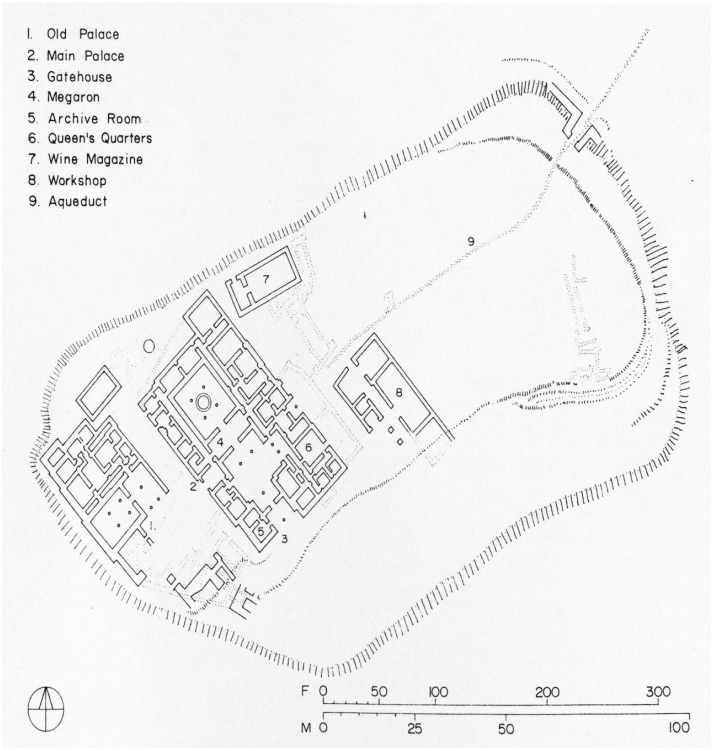
Source: Kostof, Spiro. 1985. *A History of Architecture: Setting and Rituals*. New York: Oxford University Press, figure 5.11, p. 100.

Figure 29. Map of the Eastern Mediterranean in the 2nd millennium B.C.



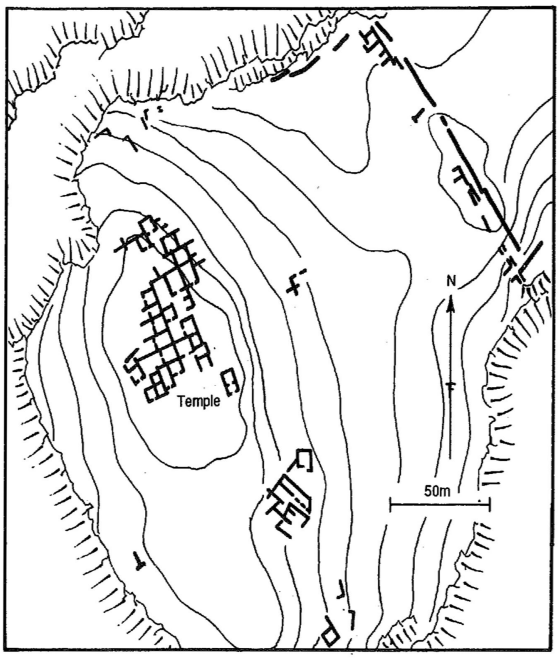
Source: Kostof, Spiro. 1985. *A History of Architecture: Setting and Rituals*. New York: Oxford University Press, figure 5.25, p. 110.

Figure 30. Plan of Minoan Royal Palace, Knossos



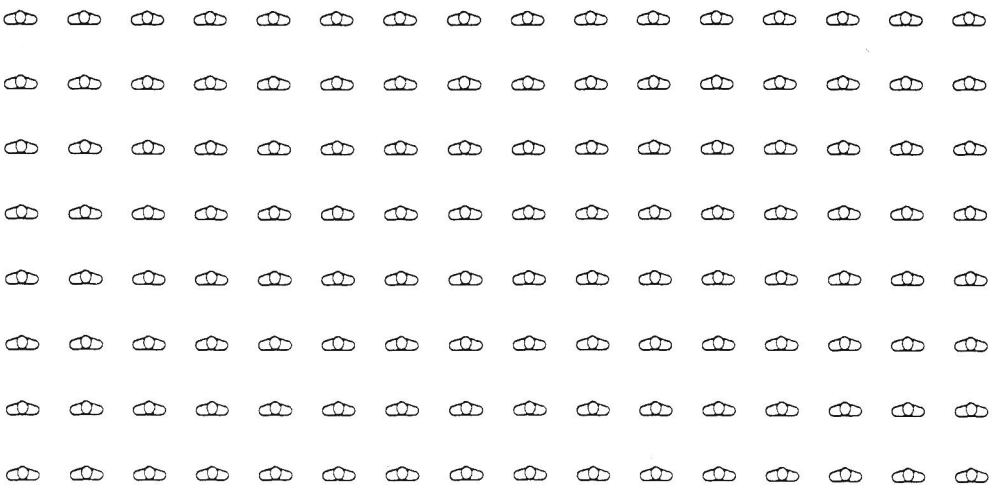
Source: Kostof, Spiro. 1985. *A History of Architecture: Settings and Rituals*. New York: Oxford University Press, figure 5.13, p. 102.

Figure 31. Plan of Mycenaean Palace, Pylos



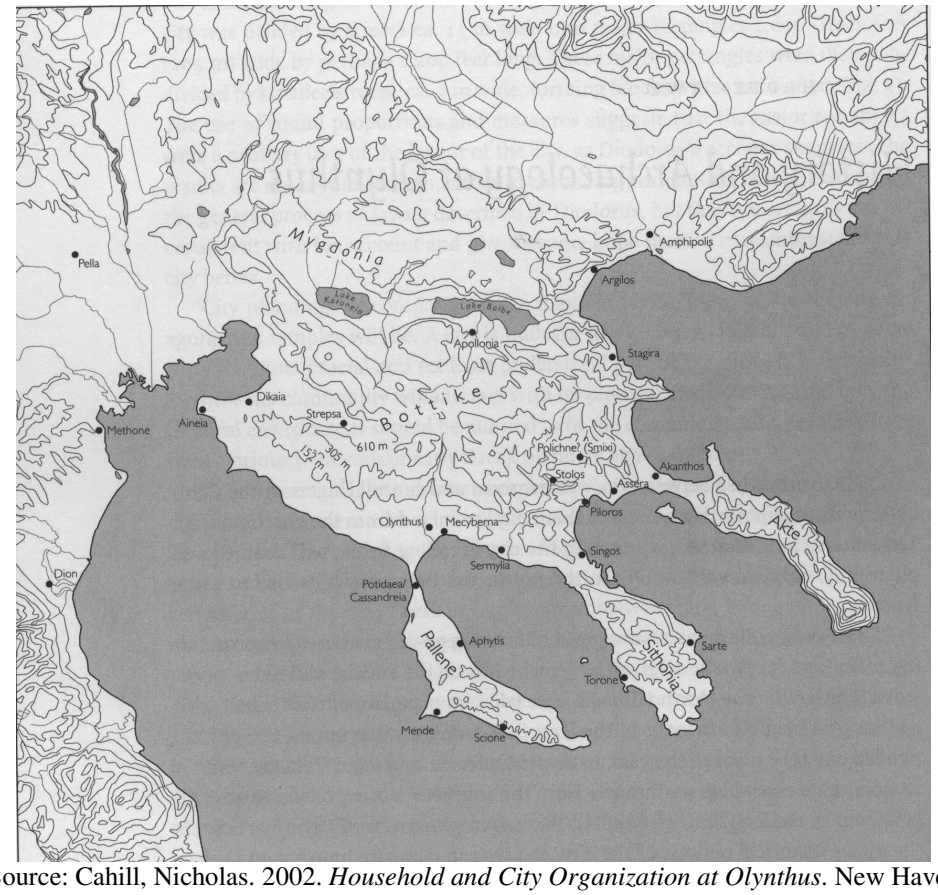
Source: Owens, E. J. 1991. *The City in the Greek and Roman World*. London & New York: Routledge, figure 2, p. 16.

Figure 32. Plan of Zagora, Andros



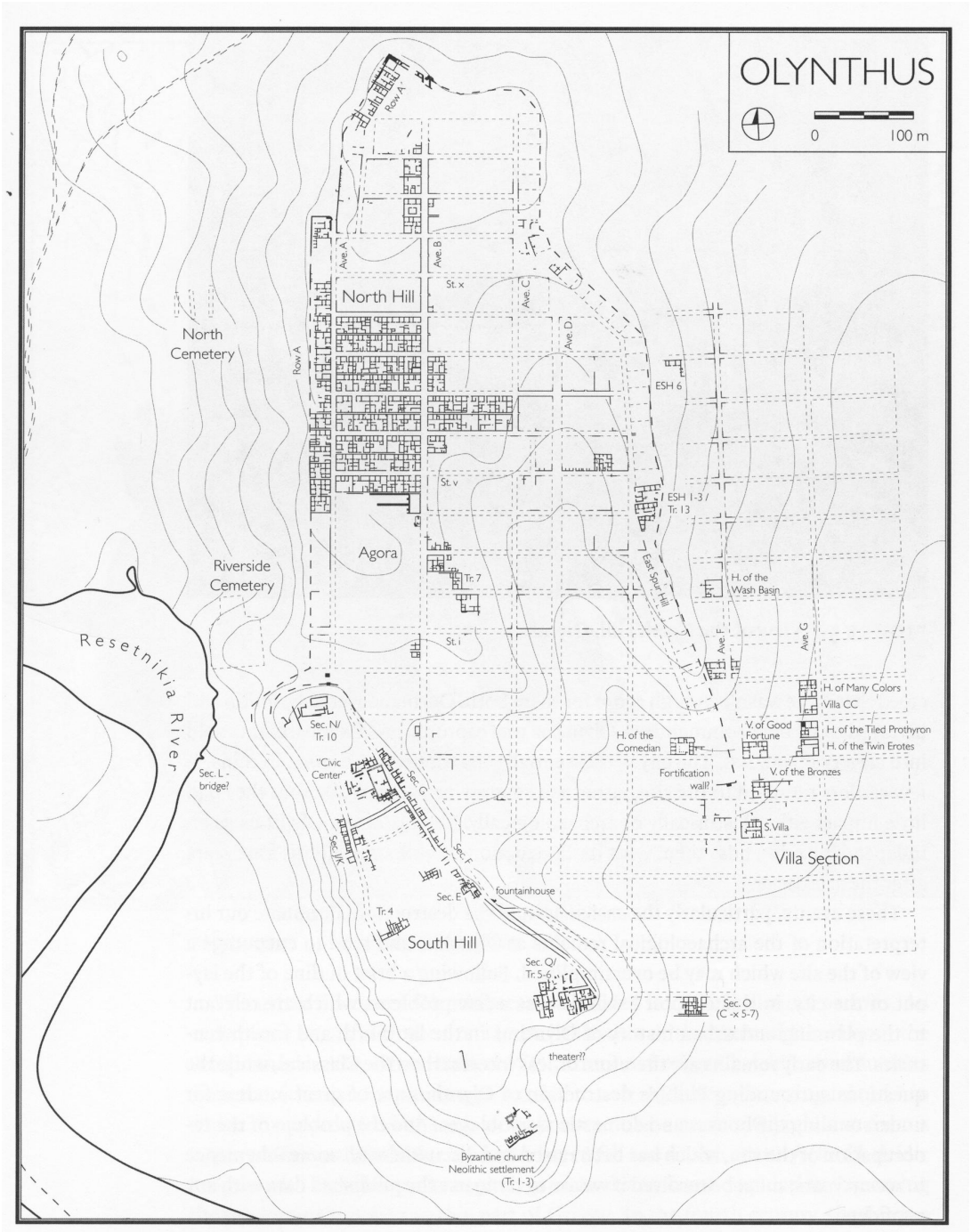
Source: Dodds, George and Robert Tavernor (eds). 2002. *Body and Building: Essays on the Changing Relation of Body and Architecture*. Cambridge: MIT Press, p. 50.

Figure 33. Scheme of Phalanx



Source: Cahill, Nicholas. 2002. *Household and City Organization at Olynthus*. New Haven & London: Yale University Press, figure 4, p. 24.

Figure 34. Map of Chalcidice

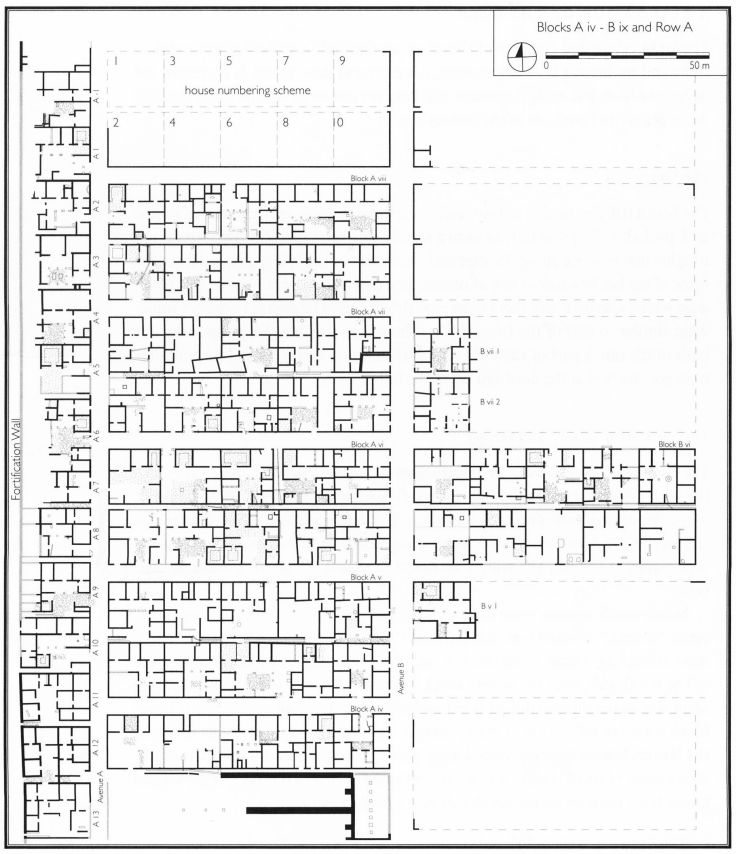


Source: Cahill, Nicholas. 2002. *Household and City Organization at Olynthus*. New Haven & London: Yale University Press, figure 6, p. 26.

Figure 35. Plan of Olynthos

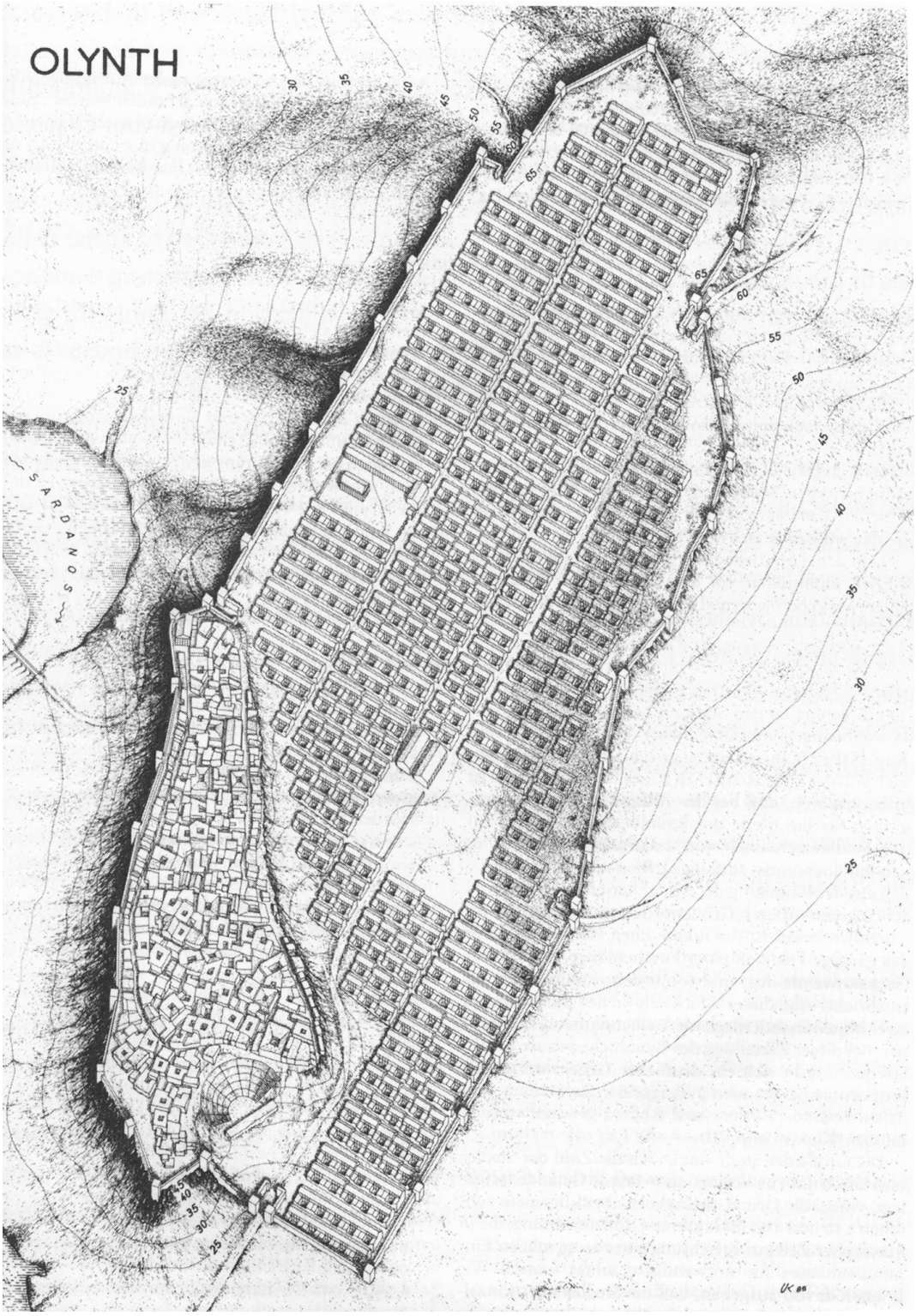
Source: www.wikimedia.org

Figure 36. View of Olynthos



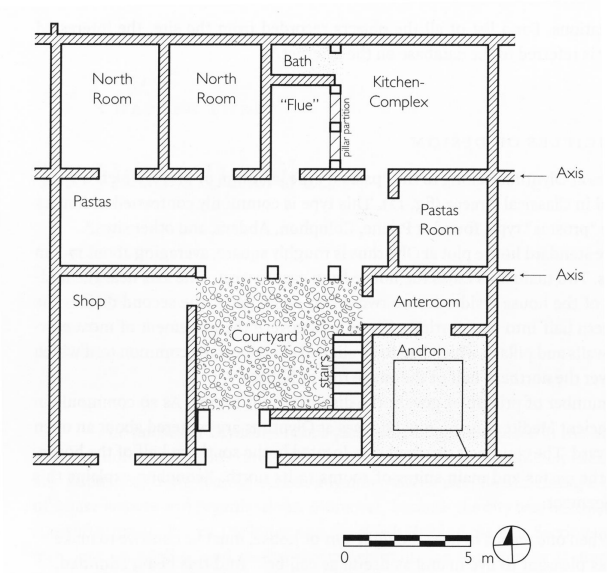
Source: Cahill, Nicholas. 2002. *Household and City Organization at Olynthus*. New Haven & London: Yale University Press, figure 7, p. 28.

Figure 37. Housing Blocks, Olynthos



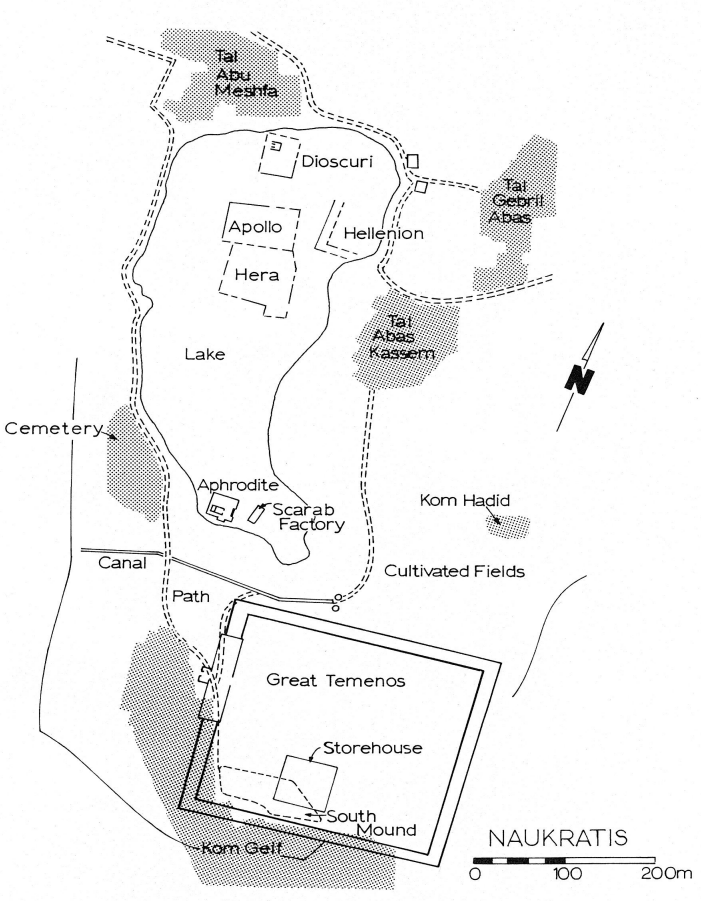
Source: Cahill, Nicholas. 2002. *Household and City Organization at Olynthus*. New Haven & London: Yale University Press, figure 44, p. 196.

Figure 38. Reconstruction Drawing of Olynthos



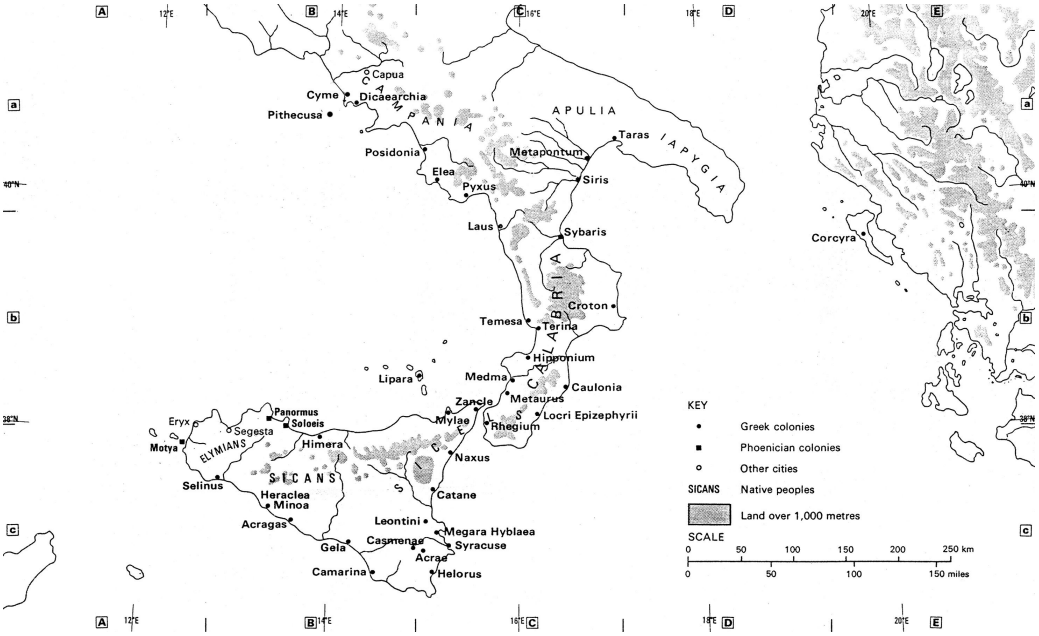
Source: Cahill, Nicholas. 2002. *Household and City Organization at Olynthus*. New Haven & London: Yale University Press, figure 12, p. 76.

Figure 39. Plan of a "Typical" House, Olynthos



Source: Coulson, William D.E. 1996. *Ancient Naukratis*. Oxford: Oxbow Books, p. 7.

Figure 40. Plan of Naukratis

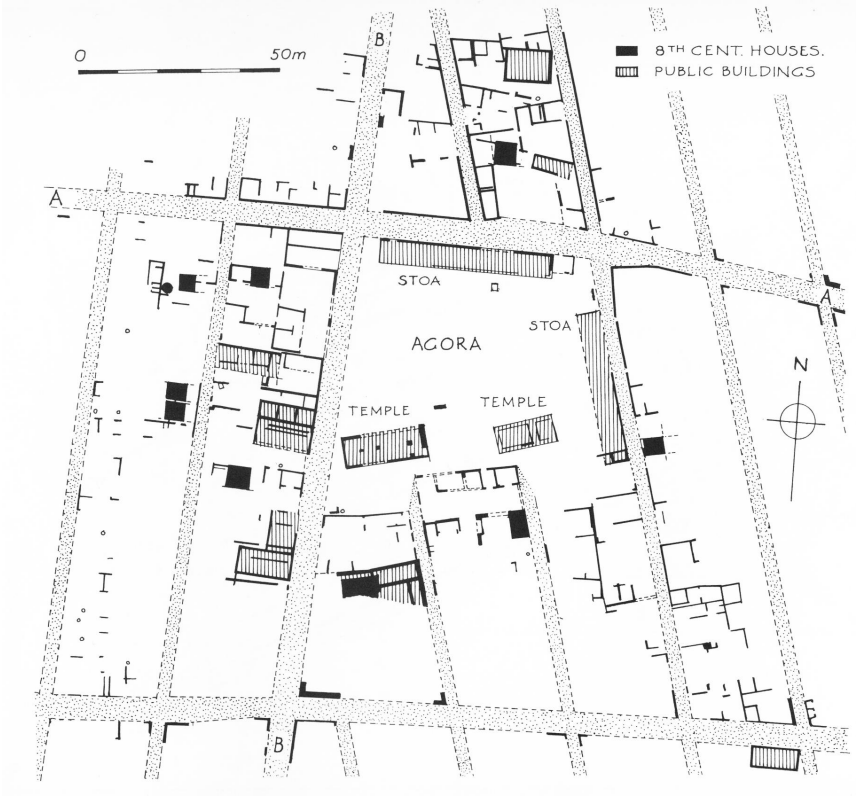


Source: Boardman, John. 1982. *The Cambridge Ancient History*. Cambridge&New York: Cambridge University Press, p. 96.

Figure 41. Map of Sicily and South Italy

Source: www.itisaugusta.it

Figure 42. Plan of Megara Hyblaea

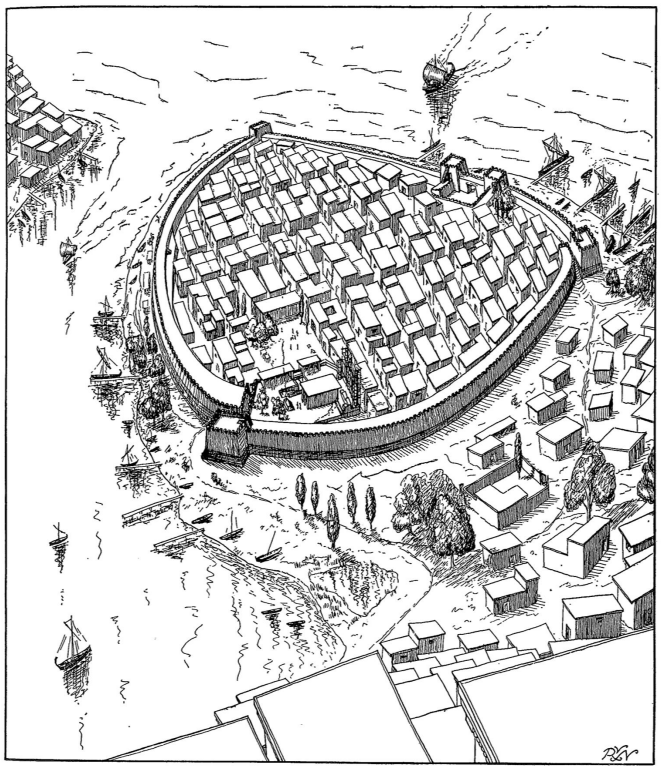


Source: Ward-Perkins, J.B. 1974. *Cities of Ancient Greece and Italy: Planning in Classical Antiquity*. New York: George Braziller, plate 35.

Figure 43. Plan of the Agora, Megara Hyblaea

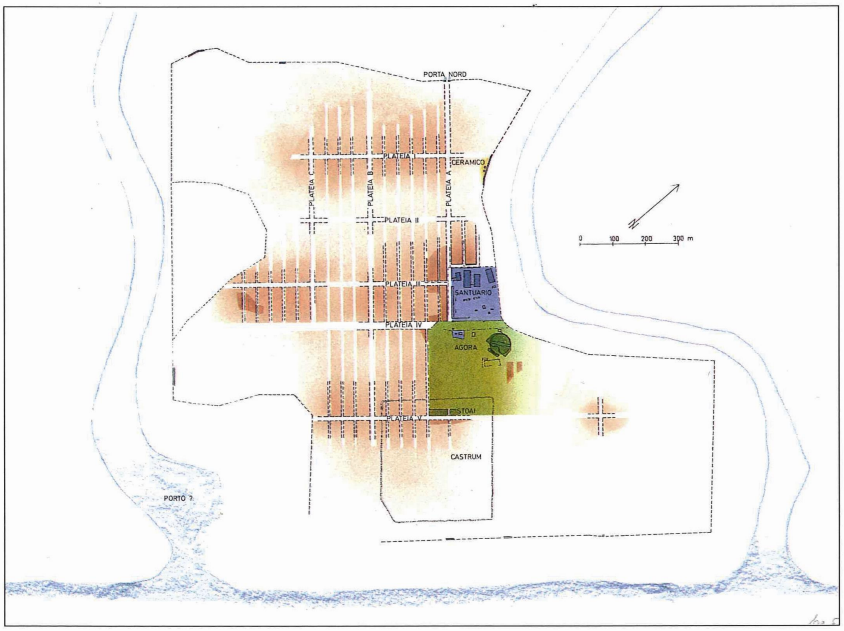
Source: www.cabiancav.it

Figure 44. Aerial View of Megara Hyblaea



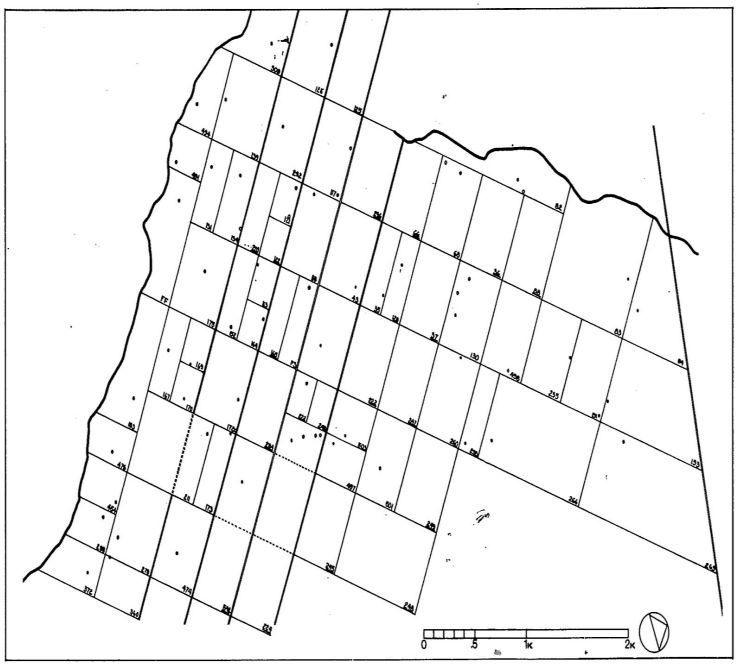
Source: Cook, J.M. 1958-59. "Old Smyrna" in *The British School of Archaeology at Athens*. vol. 53-54, figure 3, p. 15.

Figure 45. Reconstruction Drawing of Old Smyrna in the late 7th century B.C.



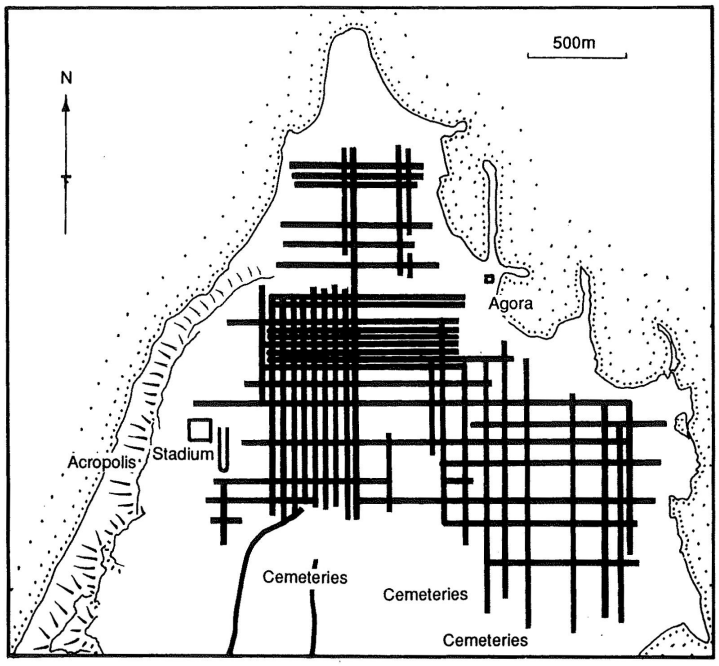
Source: Mertens, Dieter and Greco, Emanuelle. 1996. "Urban Planning in Magna Graecia" in G.P. Carratelli (eds) *The Greek World: Art and Civilization in Magna Graecia and Sicily*. New York: Rizzoli International Publications Inc. p. 248

Figure 46. Plan of Metapontum



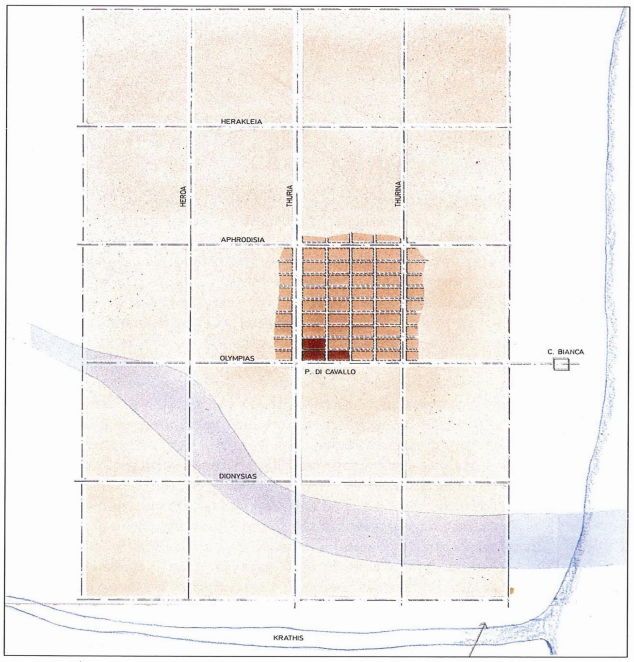
Source: Mertens, Dieter and Greco, Emanuelle. 1996. "Urban Planning in Magna Graecia" in G.P. Carratelli (eds) *The Greek World: Art and Civilization in Magna Graecia and Sicily*. New York: Rizzoli International Publications Inc., p. 247

Figure 47. Agricultural Plots, Chora of Metapontum



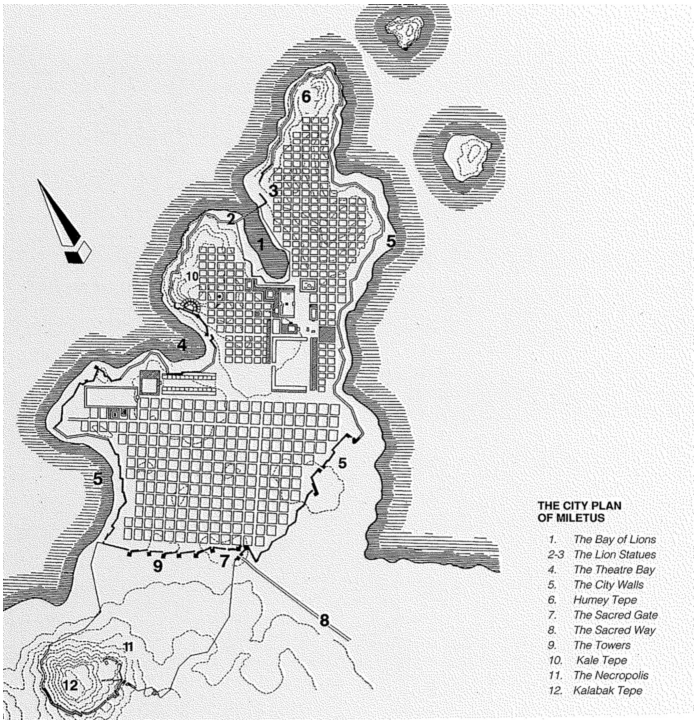
Source: Owens, E. J. 1991. *The City in the Greek and Roman World*. LondonNew York: Routledge, figure 15, p. 58.

Figure 48. Schematic Plan of Rhodes



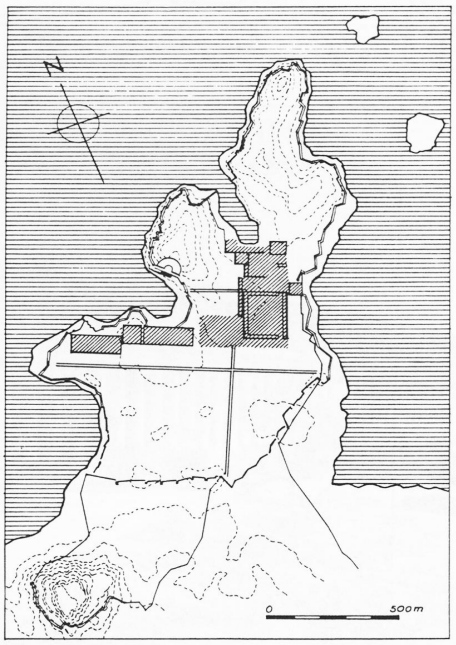
Source: Mertens, Dieter and Greco, Emanuelle. 1996. "Urban Planning in Magna Graecia" in G.P. Carratelli (eds) *The Greek World: Art and Civilization in Magna Graecia and Sicily*. New York: Rizzoli International Publications Inc., p. 259

Figure 49. Schematic Plan of Thouroi



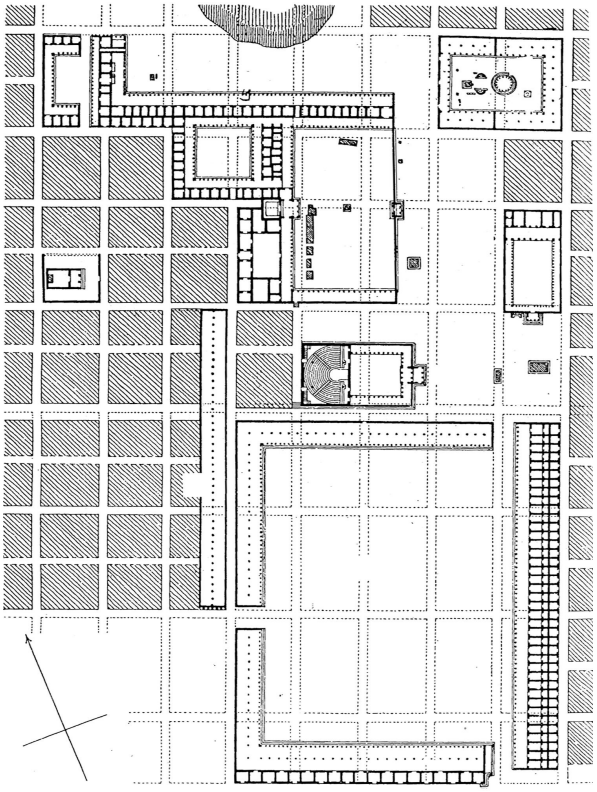
Source: Akurgal, Ekrem. 1973. *Ancient Civilizations and Ruins of Turkey: From PrehistoricTimes until the End of the Roman Empire*. trans. J. Whybrow, M. Emre. İstanbul: Haşet Kitabevi, figure 76, p. 208.

Figure 50. Plan of Miletos



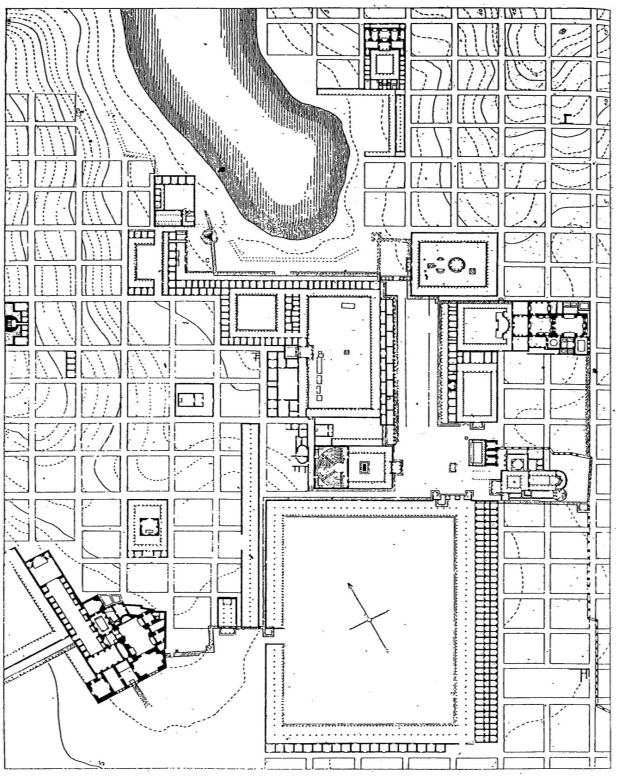
Source: Ward-Perkins, J.B. 1974. *Cities of Ancient Greece and Italy: Planning in Classical Antiquity*. New York: George Braziller, figure 8.

Figure 51. Schematic Plan of "Central" Miletos



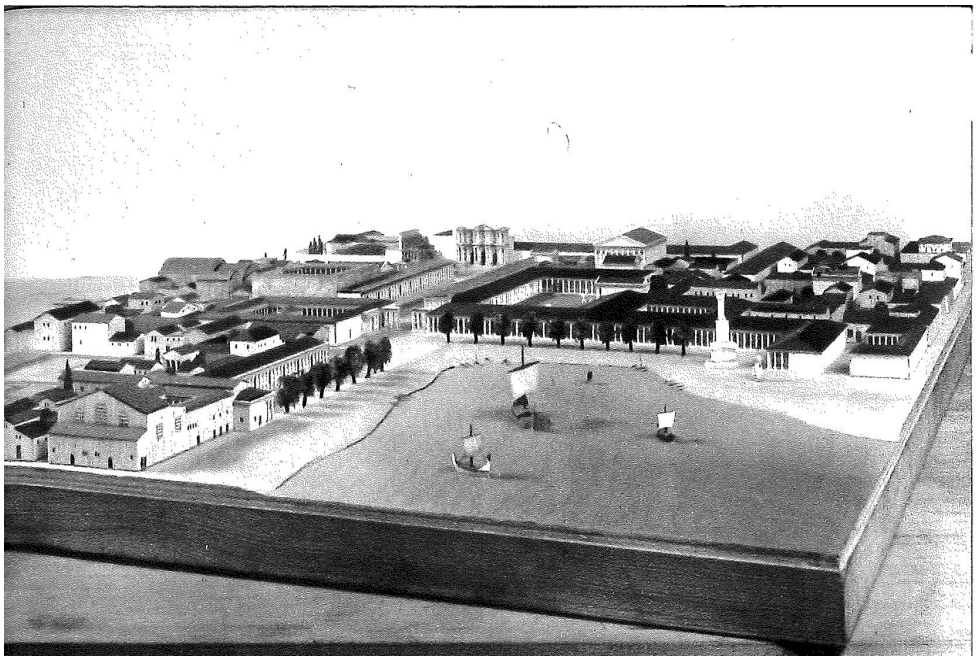
Source: Akurgal, Ekrem. 1973. *Ancient Civilizations and Ruins of Turkey: From PrehistoricTimes until the End of the Roman Empire*. trans. J. Whybrow, M. Emre. İstanbul: Haşet Kitabevi, figure 77, p. 212.

Figure 52. Plan of "Central" Miletos in Hellenistic Times



Source: Akurgal, Ekrem. 1973. *Ancient Civilizations and Ruins of Turkey: From PrehistoricTimes until the End of the Roman Empire*. trans. J. Whybrow, M. Emre. İstanbul: Haşet Kitabevi, figure 78, p. 214.

Figure 53. Plan of "Central" Miletos in Roman Times



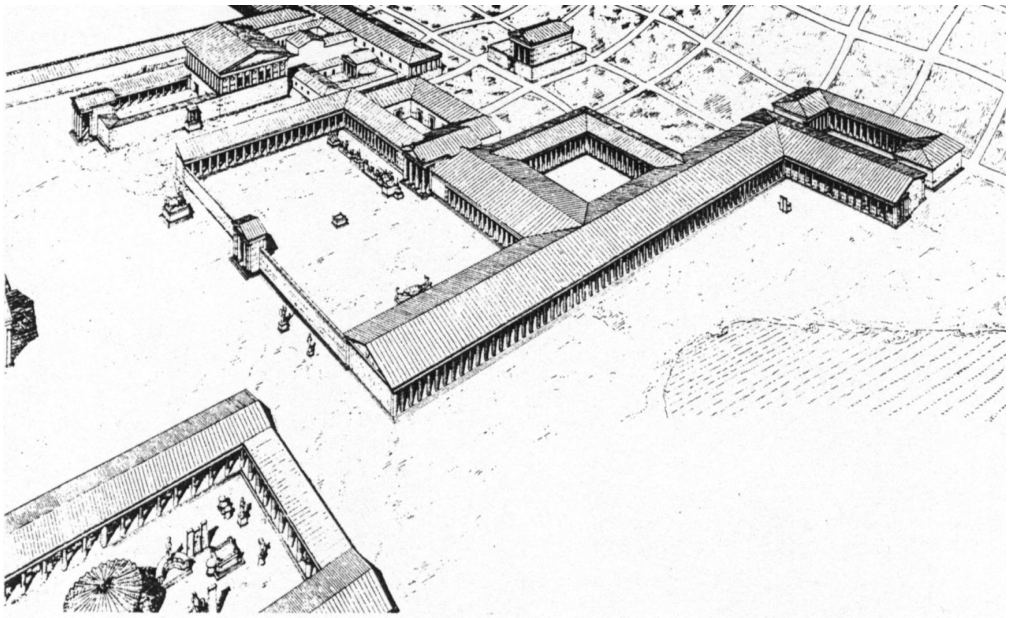
Source: Cook, J.M. 1962. *The Greeks in Ionia and the East*. London: Thames & Hudson, plate 55.

Figure 54. Model of "Central" Miletos

Figure 55. General View of “Central” Miletos

Figure 56. View of Ionic Stoa, Miletos

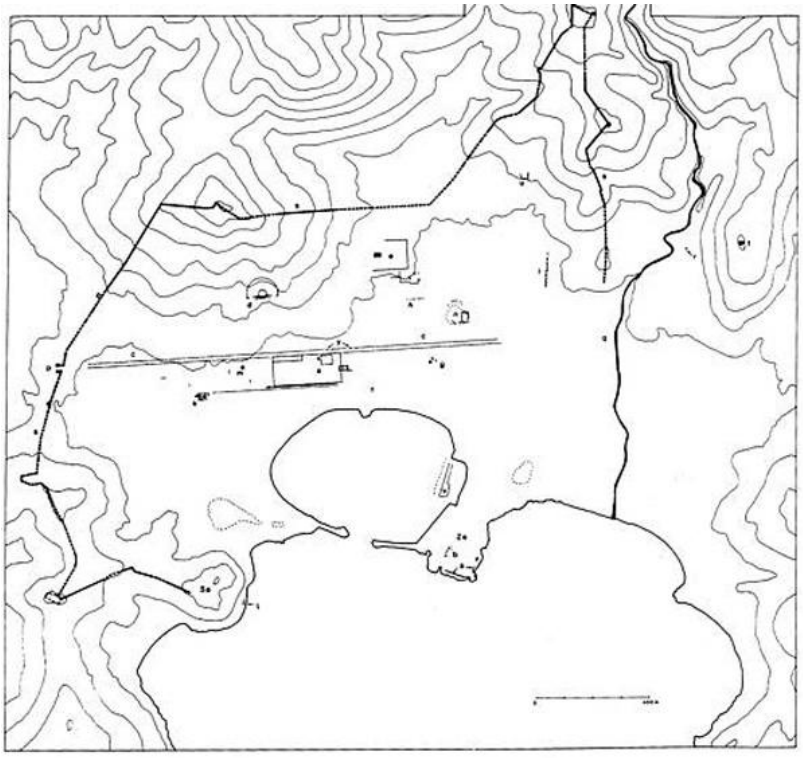
Figure 57. Main Street Leading from South Agora to Lion Harbor, Miletos



Source: Ward-Perkins, J.B. 1974. *Cities of Ancient Greece and Italy: Planning in Classical Antiquity*. New York: George Braziller, figure 10.

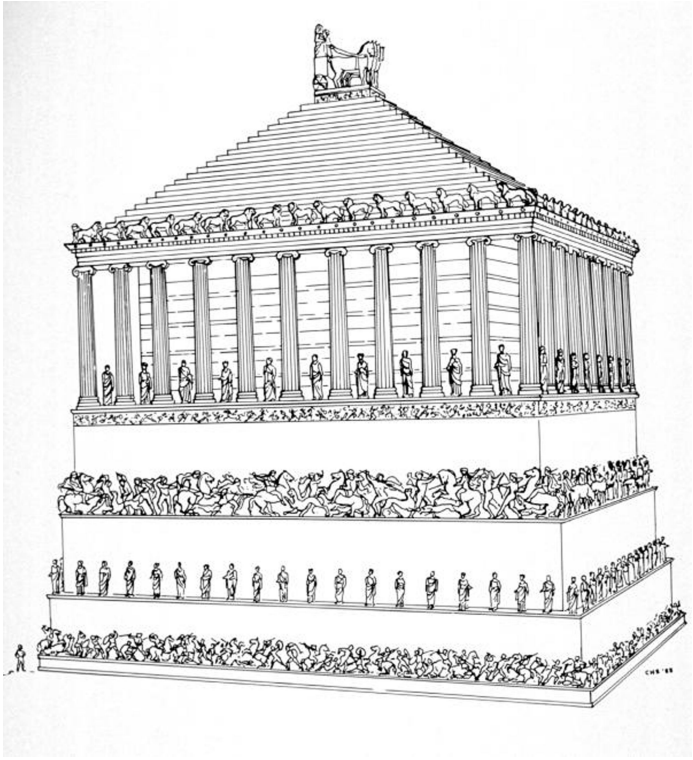
Figure 58. Reconstruction Drawing of North Agora, Miletos

Figure 59. View from North Agora, Miletos



Source: www.humaniora.edu.dk

Figure 60. Plan of Halikarnassos

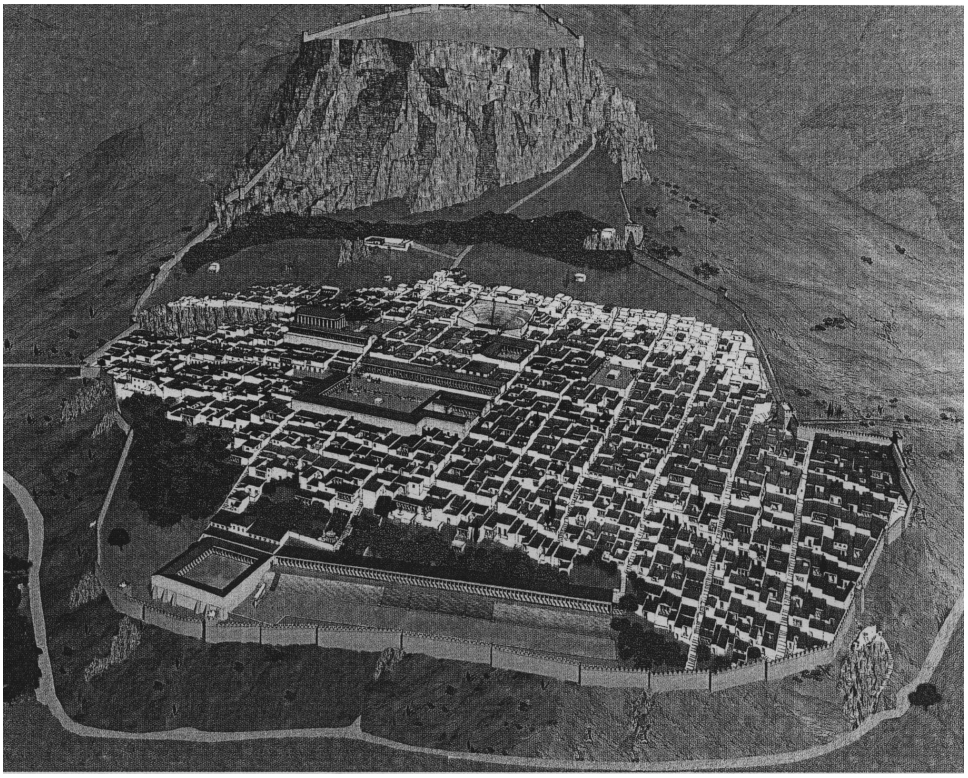


Source: www.teachers.sduhsd.k12.ca.us

Figure 61. Reconstruction Drawing of Mausoleum, Halikarnassos

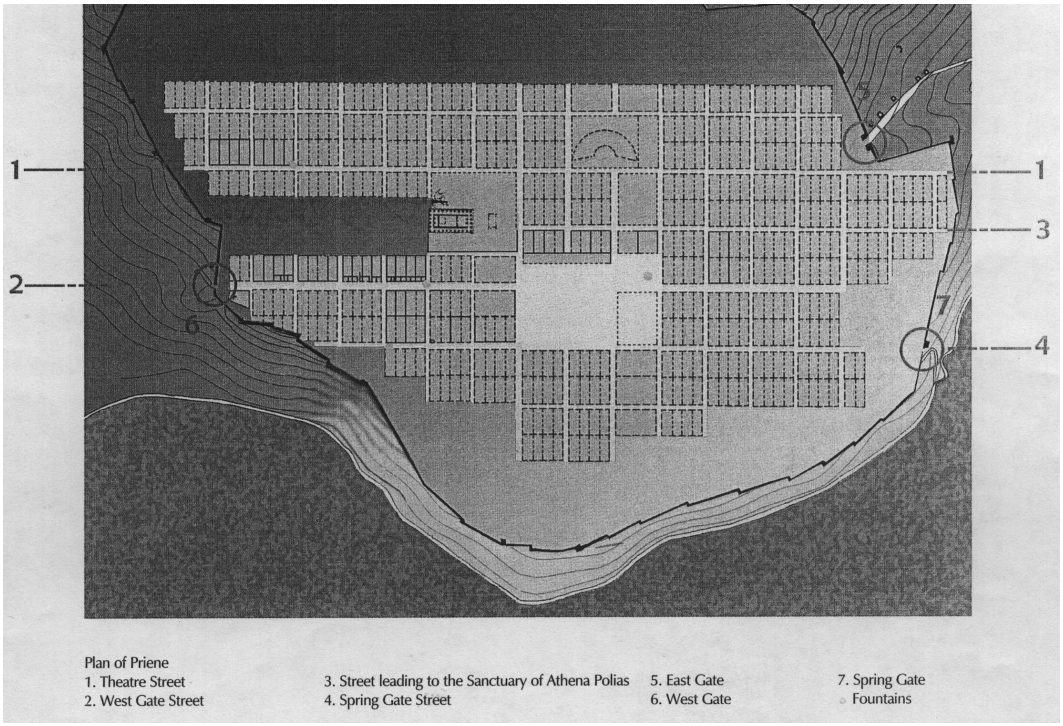
Source: Rumscheid, Frank. 1998. *Priene: A Guide to the Pompeii of Asia Minor*. İstanbul: Ege Yayınları, figure 19, p. 27.

Figure 62. Aerial View of Priene



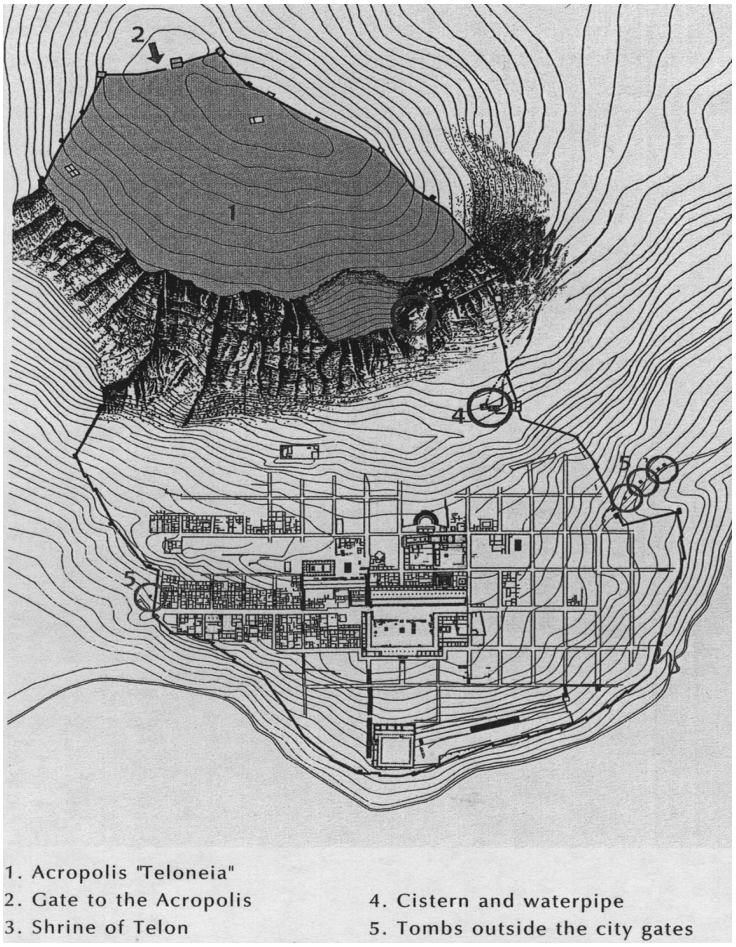
Source: Houtopoulos, Yiannis. 2000. *Priene*. Athens: Foundation of the Hellenic World, (p. 49)

Figure 63. Reconstruction Model of Priene



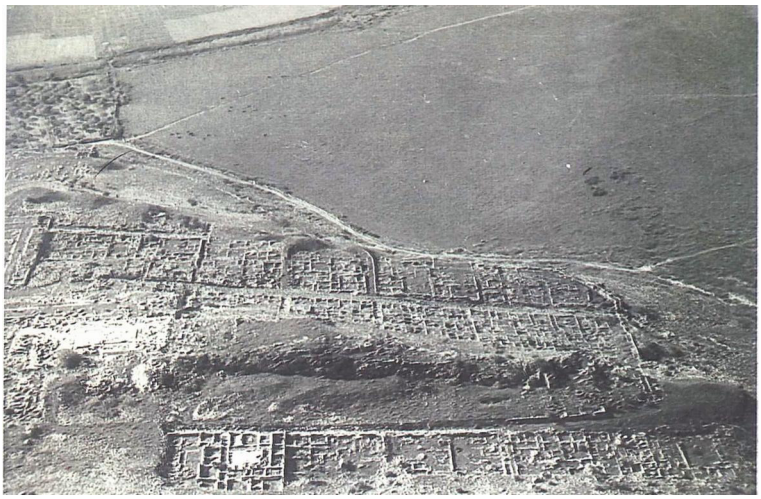
Source: Houtopoulos, Yiannis. 2000. *Priene*. Athens: Foundation of the Hellenic World, (p. 45)

Figure 64. Schematic Plan of Priene



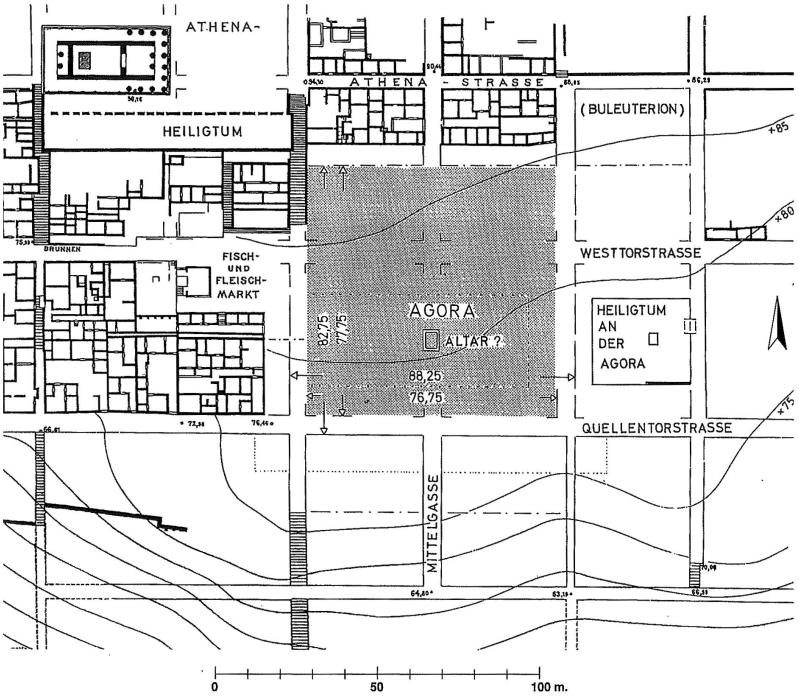
Source: Houtopoulos, Yiannis. 2000. *Priene*. Athens: Foundation of the Hellenic World, (p. 48)

Figure 65. Plan of Priene with its Environs



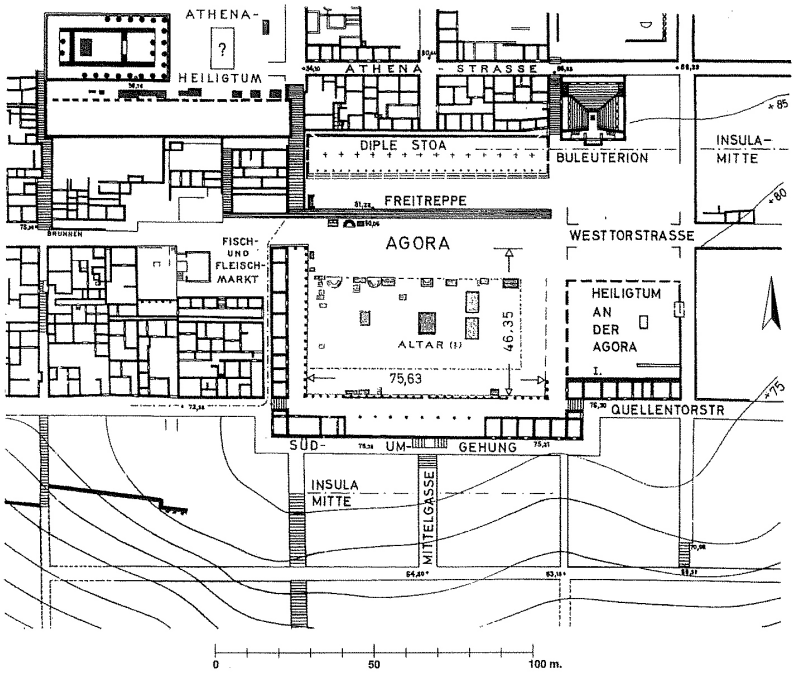
Source: Rumscheid, Frank. 1998. *Priene: A Guide to the Pompeii of Asia Minor*. İstanbul: Ege Yayınları, figure 70, p. 90.

Figure 66. Aerial View of Western Part of Priene



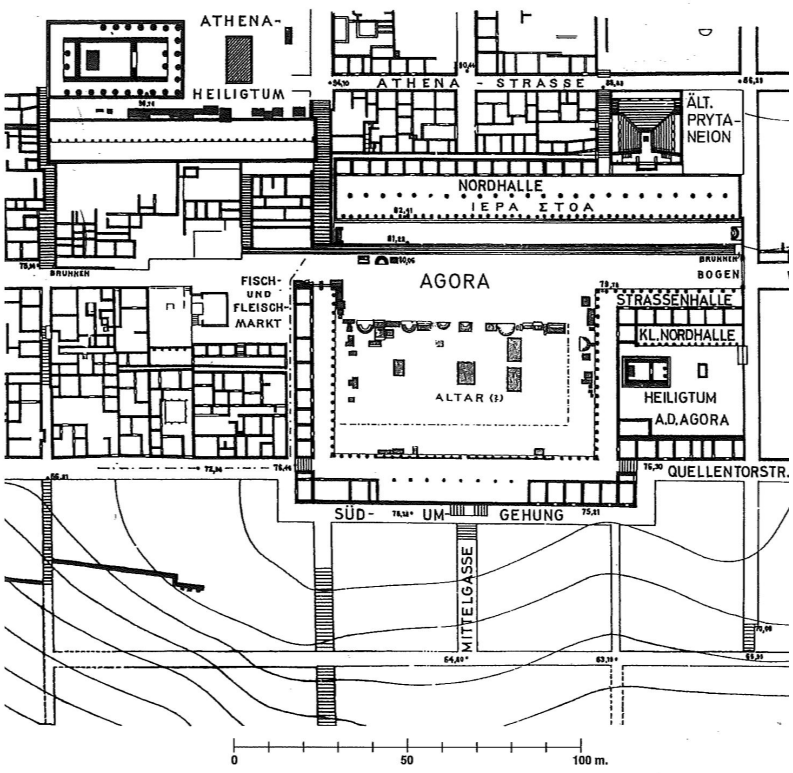
Source: Rumscheid, Frank. 1998. *Priene: A Guide to the Pompeii of Asia Minor*. İstanbul: Ege Yayınları, figure 53, p. 71.

Figure 67. Plan of Agora in the 4th century B.C., Priene



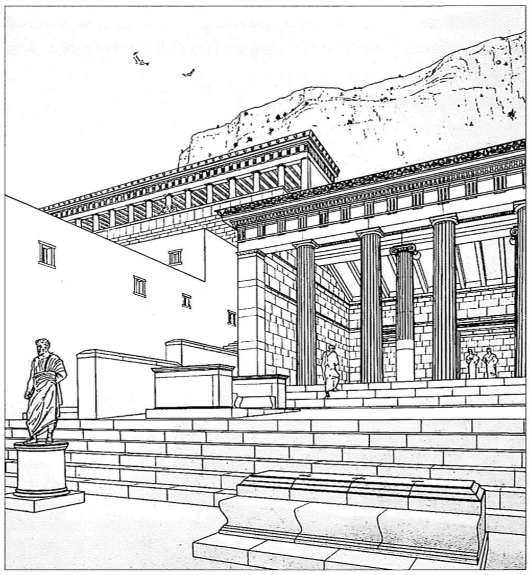
Source: Rumscheid, Frank. 1998. *Priene: A Guide to the Pompeii of Asia Minor*. İstanbul: Ege Yayınları, figure 54, p. 72.

Figure 68. Plan of Agora in the 3rd century B.C., Priene



Source: Rumscheid, Frank. 1998. *Priene: A Guide to the Pompeii of Asia Minor*. İstanbul: Ege Yayınları, figure 55, p. 73.

Figure 69. Plan of Agora in the 2nd century B.C., Priene

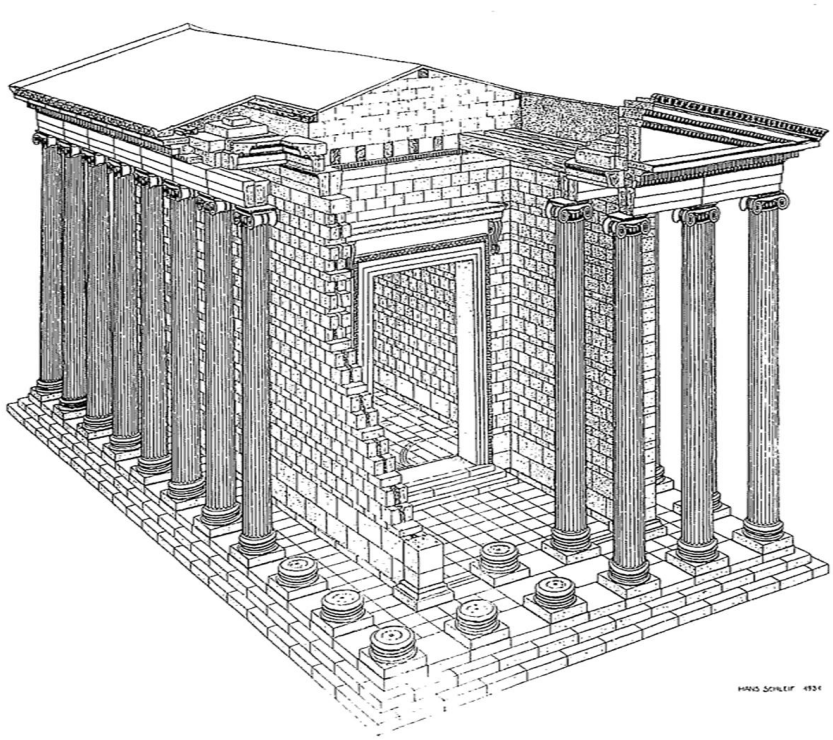


Source: Rumscheid, Frank. 1998. *Priene: A Guide to the Pompeii of Asia Minor*. İstanbul: Ege Yayınları, figure 56, p. 74.

Figure 70. Reconstruction Drawing of North-West Corner of Agora, Priene

Figure 71. View of Agora, Priene

Figure 72. Steps of Agora, Priene



Source: Rumscheid, Frank. 1998. *Priene: A Guide to the Pompeii of Asia Minor*. İstanbul: Ege Yayınları, figure 56, p. 74.

Figure 73. Reconstruction of Temple of Athena, Priene

Figure 74. Columns of Temple of Athena, Priene

Figure 75. View of Stepped Street Leading to Temple of Athena,Priene

Figure 76. View of West Gate Street, Priene

Figure 77. Retaining Wall and Steps of a North-South Street, Priene

Figure 78. View of Residential Area, Priene