

The Image of the City in Antiquity: Tracing the Origins of Urban Planning, Hippodamian Theory, and the Orthogonal Grid in Classical Greece

by

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Supervisory Committee

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The orthogonal, or rectangular, grid plan arose out of a need to organize the sprawling cities of Ancient Greece. To one particularly enigmatic figure in history, this problem was met with a blueprint and a philosophy. The ancient city-planner known as Hippodamus of Miletus (c. 480-408 BCE) was more of a philosopher than an architect, but his erudite connections and his idealistic theories provided him with numerous opportunities to experiment with the design that has come to bear his name. According to Aristotle, he was commissioned by the city of Athens to redesign its port-city, the Piraeus, and it is likely that he later followed a Pan-Hellenic expedition to an Italic colony known as Thurii (Thourioi). Strabo argues that the architect was also present at the restructuring of the city of Rhodes; however there is some debate on this issue. Hippodamus' blueprint for a planned, districted city soon came to define the Greek polis in the Classical period, culminating with Olynthus in the Chalcidice, but his ideas were by no means unique to his own mind. There are precedents for the grid plan not only within the large, administrative empires of the Near East, but also within the Greek colonies of the Mediterranean, whose own histories span at least two centuries before Hippodamus' lifetime. Since the 19th century, when Hippodamus received his title as the 'Father of Urban Planning', confusion and mistranslations have plagued the discipline, casting doubt on nearly every facet of Greek urbanism. Although he could not have invented the orthogonal grid plan, as Aristotle claims, it may prove far more effective to focus instead on Hippodamus' philosophy and to give voice to where he himself excelled: the theoretical side to city planning.

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Introduction

The restless energy that has come to characterize Greek civilization has generated individuals with an unremitting desire to create and to discover, embodied in no small part by Homer's Odysseus. For, "by day he would sit on the rocks and the sands [of Ogygia], racking his soul with tears and groans and griefs, and he would look over the unresting sea, shedding tears" (Homer 5.156-8). Discontentment, however, can have a more comedic side: in Aristophanes' play *The Birds*, two Athenians, known as Pisthetaerus and Euelpides, have become irritated by the state of their city, a place where people "spend their whole lives...chanting forth judgments from their law-courts" (40-1). The two of them then decide to leave it all behind and create their own utopian city in the clouds, which they appropriately call *Νεφελοκοκκυγία*, or Cloudcuckooland. When a geometer by the name of Meton appears to lend his experience, remarking that he hopes "to survey the plains of the air...and to parcel them into lots" (995), he acts unquestionably like a *geonomos*, who accompanied Greek colonists to survey land for their new cities. Meton proposes a circular town plan and attempts to use rulers and compasses to sketch out the sky, hoping as he claims "to inscribe a square within this circle...into which all the straight streets will lead, converging to this center like a star" (1004-7). The playwright's satire, in fact, extends to all intellectuals, particularly those who attempted to theorize on the nature of the Greek *polis*. However, the character of Meton, since he was not truly a town-planner, is misappropriated here by Aristophanes. In reality, he may serve more fittingly as an allusion to another individual who swept through Athens only decades before this play (Wycherley 1937, 23). Hippodamus of Miletus was such an individual, whose theories on city planning ultimately came to shape a vast number of Greek cities, bringing sweeping change on an urban level from the fifth century BCE into the Hellenistic period.

Hippodamus is an enigmatic figure whose life has been documented by only a few sources, but his reputation as the ‘father of urban planning’ has awarded him a hallowed place within history. This fame, however, has most likely been misplaced. For the Greeks, he was a natural philosopher and an architect who originated the concept of the orthogonal grid plan. Aristotle, who provides the most complete account of his theories in his *Politics*, attributes Hippodamus with inventing a way in which to divide cities (τὴν τῶν πόλεων διαίρεσιν εὔρε 2.1267b 22). Modern historians of urban planning have then used the term ‘Hippodamian’ to categorize the ‘new style’ of Ionian cities that came to include Miletus, Knidos, Priene, Ephesus, and so on (Burns 419). Aristotle himself refers to a “new and Hippodamian way” of designing cities that contrasts with the older, Archaic forms (Greco 108, Aristotle 7.1330b 20-2). The design, also known as the ‘checkerboard’ plan, consists of a regular arrangement of buildings separated by straight streets crossing at right angles (Wycherley 1962, 16). The agora, or marketplace, was thereby formed in the center and the surrounding land was divided into zones in order to differentiate the functions of each district. And yet, precedents for the grid plan existed for centuries, not only within the Greek world, such as at Megara Hyblaea and Akragas, but also in the Near East, in such places as Babylon and Tell el-Amarna. The few cities that can truly be associated with Hippodamus are limited to Miletus, Athens’ port city the Piraeus, an Athenian colony known as Thurii (Thourioi), and the Classical city of Rhodes (Owens 55). All of these connections, unfortunately, are not perfect, and a great deal of modern scholarship has gone into deciphering or refuting Hippodamus’ presence at each of these cities. Aristotle, again, is the most trusted source for the man, and he links him directly with Athens’ port city, the Piraeus (2.1267b 22). Diodorus also provides the most concise history of the city of Thurii, while documenting an orthogonal city plan that strongly suggests Hippodamian influence (12.9-11).

Lastly, Strabo attempts to connect “the same architect...who founded the Piraeus” with the city of Rhodes (14.2.9, 14.654), but most scholars agree that this is unlikely, given that 404 BCE – the year the city was restructured into a grid – is too late for a man presumed to be born around 500 BCE. Alfred Burns, nonetheless, takes the opposite view and argues for a birth around 480 BCE in order to coincide with Strabo’s testimony (415). In either case, Hippodamus’ theories, rather than his physical contributions, may provide more insight into a design that helped to shape Greek colonies and to bring scientific legitimacy to an otherwise unrecognized discipline.

Aristotle describes his ideas for an ideal city in the most complete form that can be found in literature:

Hippodamus, son of Euryphon, a Milesian, who invented [εὑρε] the division of cities into blocks and cut up [κατέτεμεν] [the] Piraeus...was the first man not engaged in politics who attempted to speak on the subject of the best form of constitution. 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 [of warriors]. 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. (2.1267b 21-2, 29-34)

Although he could not have invented the grid plan that has come to bear his name, Hippodamus was likely one of the first individuals in Greece to expound on “a correspondence between physical and social planning” (Cahill 3). He had much more to do with the theoretical side to planning, which involved the division of land and territory so as to meet the societal needs of a city’s inhabitants. The city known as Thurii, if the connection with Hippodamus is true, may have provided fertile ground for the man to test his theories and to bring substance to the

theoretical side of urban planning. The concepts that are developed throughout Hippodamus' life, arguably, go on to influence later 'utopian' literature, most significantly Plato's *Laws* and his ideal city of Magnesia (Cahill 5). It is traditionally believed, moreover, that Hippodamus likely codified his urban theory after experiencing the reorganization of his home city of Miletus, which adopted the grid plan after its destruction by the Persians in 494 BCE (Wycherley 1962, 17).

Orthogonal town planning, therefore, has a history that exists both completely distinct from and closely intertwined with the legacy of Hippodamus. Two regions in particular experienced an efflorescence of city planning during Greek history: the myriad of colonies in Sicily and the well-known city of Olynthus on the Chalcidic peninsula. The former expresses a discernible evolution that took place throughout the seventh and sixth centuries, and the latter provides the most distinguished example of a Hippodamian-style grid that culminated with the end of the Classical period. As J.J. Pollitt explains in his *Art and Experience in Classical Greece*, "a deep seated need to discover an order in, or superimpose an order on, the flux of physical and psychological experience is a continuing feature of all Greek artistic and philosophical expression" (3). Much like the ideal geometry that characterized the Parthenon or the Doryphoros of Polykleitos, the orthogonal grid represented the continuing desire of the Greeks to superimpose order on their landscape. Urban planning once sought, and continues to seek, harmony for the *polis* by exemplifying a symmetrical beauty that might bring contentment to the life of a denizen.

1. Near Eastern Precedents for the Orthogonal Grid

Although largely attributed by contemporary Greeks with the orthogonal design, Hippodamus of Miletus could not have invented the grid for which he is most famous. Instead, he likely fashioned his ideas from city plans that had been in place for centuries before his time. He worked, moreover, within a zeitgeist of theoretical thought that concerned urban redevelopment and regulatory strategies. He did not exist within a vacuum. By around 400 BCE, Hippocrates of Kos, for instance, published his *On Air, Water, and Places*, which dealt in part with the issue of public health within a city. Ionian Greece as a whole had been a flourishing center of scientific thought for over a century before Hippodamus' presumed lifetime, and its preeminent city, Miletus, was renowned as a center of philosophy. Thales, Anaximander, and Heraclitus all hailed from this city. Even though the *polis* had emerged as early as the eighth century, the urban center (ἄστυ), meaning the totality of a city's urban structures, was still slow to develop by the late sixth century. As a result, opportunities for town planning were widespread throughout the Mediterranean during Hippodamus' time. The construction of harbors, commercial districts, and public areas became the focus of the new, Classical city. Hippodamus is, nevertheless, the first town planner for which literary evidence survives from the Greek world (Mazza 113), due in large part to a passage in Aristotle's *Politics* (2.1267b 21-1268a 40). Since at least the fourth century, the Hippodamian grid design has been inexplicably linked with its eponymous creator. However, as Burns argues, "it was recognized [by scholars] that this [grid plan] is the most obvious way to lay out a new city in vacant terrain, and that the earliest cities in the Near East, as well as the Greek colonies in Sicily had been built on such a plan" (415). Hippodamus himself did not invent the plan, but rather codified it. Before Hippodamus, the orthogonal grid was already the logical culmination of urban growth within

highly developed cities. Strict, systematic grid layouts had been characteristic of large, prosperous cities of the ancient Near East for centuries, from the prosperous city-states of Mesopotamia to the planned urbanized centers along the Egyptian Nile.

Planning as a recognizable discipline has uncertain origins within the ancient Near East. In fact, it is more appropriate to consider the term in its earliest stages as “the exercise of deliberate forethought [or] anticipative design of action that underlies any human activity” (Alexander 13-4). From the creation of tools to the illustration of a hunt on a cave wall, most actions on an individual scale require some element of preparation in order to succeed. The same applies to the deeds of a society. Proactive, rather than reactive, thought naturally insulates a city from the pressures of urban sprawl or a scarcity of resources, allowing for a more consistent development. The process of reorganizing the physical environment, however, arises from a people’s attitudes in relation to its surrounding land. A social group may see itself as “master, servant, steward, or interpreter of the natural world” (Pregill xiv) according to the sophistication of its technology. The development of agriculture by the tenth millennium BCE resulted in a greater conviction of mankind’s mastery over the environment, although to a very limited degree. In theory, sustenance could now be predicted with some level of certainty as a direct result of cultivation – the outcome of a deliberate, human cause. Nevertheless, not all causes were seen as human, so a rich tapestry of religious belief also mediated a community’s interaction with its land. Since the River Nile, for instance, inundates the land of Egypt each year almost without fail, the people could irrigate their fields, bringing water from the river above a system of levees to supply their harvest (Pregill 5). The cities of Mesopotamia flourished as well from a similar strategy. In turn, a highly centralized pantheon of gods developed to ensure the stability of this conspicuously unsteady house of cards. All of these elements – social, religious,

and economic – played a significant role in the layout of a city and its ability to look to the future.

As an urban center became more complex, it could take one of two forms: the *ville spontanée*, or a settlement “that grows according to the needs of the inhabitants, [or] the *ville créée*, a city planned and developed by the central authority” (Yasur-Landau 225-6). The latter undoubtedly required a visionary mind. The earliest recorded individual to have been involved with urban design can be traced back to an architect from Egypt, known as Imhotep. He was an advisor to the Pharaoh Djoser during the Third Dynasty (circa 2600 BCE), and he is credited with inventing the Step Pyramid – an early prototype of the pyramid design. In addition, it is believed he also planned the layout of Djoser’s necropolis at Saqqara, which lies just to the northwest of Egypt’s capital of the time, Memphis (Alexander 14). Imhotep was adept in not only architecture, but also physics, engineering, and medicine, and his reputation extended even to the Greeks, who conflated him with their worship of Asclepius, the healer god. Given his rank and access to more privileged education, he “certainly understood ancient geometry, stonecutter experience and tools as well as the simplest sundial principles” (Kittler 408). Through his expertise, he by and large ushered Egypt into an age of masonry; where before architecture relied solely on sun-dried brick or wood, it could now reach new levels of grandeur and permanence. Imhotep earned his praise by catering to the immense demands of his god-king. For,

In the ancient world, the urge to provide homes for deities was felt keenly, especially during the initial phase of transition from a nomadic to a settle way of life. The onus attached to this divine provision was overwhelming. How could mere mortals presume to know the kind of built environment that would please the gods? (Kostof 4)

The answer was to design a temple, whose layout was god-given and provided specifically to the peoples' representative, the king. For the people of Mesopotamia, it is interesting that "as late as the Babylonian period [the seventh century BCE], the kings were supposed to keep measurements secret, and they themselves lay out the dimensions of the temple and initiate construction" (Kostof 5). The king, at least superficially, was overlord, client, and architect all in one. However, in Egypt, the office of the architect was a more elevated position, and Imhotep, perhaps on account of his genius, was one of the few who managed to escape anonymity.

Egypt as a whole provides a clear account of deliberately planned cities. However, despite the popular image of ancient pyramids and statues standing in place for millennia, Dynastic Egypt was in fact a society without any permanent capital or recognizable urban sphere. In fact, Egypt serves as the primary exception to the general rule that civilization is the necessary byproduct of a city. For, "so far as there were cities in Egypt, they appear to have been creations of, rather than the creators of, Egyptian civilization" (Hammond 65). Unlike the Mesopotamians, whose reality was defined by constant warfare, there was no economic imperative that compelled ancient Egyptians to occupy the same location along the Nile from one year to the next. Regarding the urbanization of this region, Sir Leonard Woolley relates that "nothing could be more unlike the mosaic of city states, that divided between them the valley of the Euphrates and the Tigris, than the unified kingdom of Egypt, in which the city was non-existent" (Morris 12). The Egyptians undoubtedly lived in cities, but the evidence of their habitation has largely disappeared, having been either washed away by the Nile or engulfed by the desert. Unlike their civic buildings or individual homes, which were almost all composed of mud-brick, their public architecture primarily made use of stone. As such, the most characteristic monuments of Egypt still stand sentinel across the landscape. Nevertheless, the Pyramids at

Giza, for example, were not assembled together simply to stand alone in the remote desert, but rather to exist as a functional component of the entire Giza necropolis (figure 5). Although evidence for residential planning is sparse, the Egyptians actively and deliberately designed their cities of the dead. For the Egyptians “lavished attention and material resources on religion and death. Temples and tombs were either built or carved from stone and, thanks to remote locations or the protective covering of sand, these stone structures have survived remarkably well” (Gates 78).

The funerary complex at Giza, furthermore, is the culmination of centuries of trial and error. It began with a simple *mastaba* design, which is typically a flat-roofed, rectangular tomb that housed the body of an important official. Its use dates to as early as Egypt’s First Dynasty (c. 3000 BCE) (Gates 84). The earliest known *mastabas* were found at Saqqara – the location of the Step Pyramid and Funerary complex of Djoser (c. 2650 BCE), which developed directly from this same design. The Step Pyramid, moreover, “marks a transition for royal burials from the earlier *mastaba* tombs to the smooth sided pyramids of the Fourth Dynasty and later” (Gates 87). This quasi-urban layout was planned in a rectangle, oriented north to south and covering an area of 15 hectares (figure 6). A wall, measuring 545 by 278 meters, encased the tomb complex and was decorated with a ‘palace-façade’ (Gates 88). In all, this monument “demonstrates planning on the grandest scale – city planning for a mortuary city” (Lampl 29). Large masses of stone construction are set against immense open areas. The principles of design established at Saqqara effectively defined Egyptian tomb building in the centuries that followed.

Imhotep first conceived of the Step Pyramid at Saqqara as a *mastaba* on a square plan, but ended with its present form, which rises 60 meters with six unequal gradations. Although appearing to be six *mastabas* piled on top of each other, the pyramid is instead “a tower whose

masonry is held in place by outer buttress walls of diminishing height” (Mendelssohn 211). In addition to this, Imhotep also designed the south ceremonial court, which lies between the pyramid and the southern wall and was the location of the Heb-Sed festival, or royal jubilee for the presiding pharaoh. Due to his knowledge in geometry, Imhotep likely oriented his creation at Saqqara so as to be in direct relationship with the sun, which was also the heart of the Egyptian religious pantheon. Mathematically, however, the simple form of the triangle was also a significant component of early surveying, particularly when in need of positioning a landmark on flat, open terrain. Understanding the four cardinal points and the relationship with the sun, therefore, become essential during construction. When this is applied to architecture, the knowledge of orientation in relation to cardinal points can also facilitate a leap from “simple geometry to the complex, symbolic, built forms of ceremonial and monumental structures” (Kittler 412). For Egypt, the decision to lay out a necropolis by cardinal direction arose in part out of religious, but also practical, circumstances. This attention to tomb complexes, however, did not carry over into establishing street patterns or districting the urban landscape as much as it had for the Mesopotamians. But one Egyptian ruler in particular famously challenged his culture’s status quo and introduced true city planning in a region of the world where there had been very little precedent.

Amenhotep IV, who came to power c.1353 BCE, presided over Egypt’s New Kingdom during the Late Bronze Age. He rejected the polytheistic doctrine of his contemporaries and adopted the belief in one god: Aten, or the deity embodying the rays of the sun. He changed his name to ‘Akhenaten’, meaning “glorified spirit of the sun-disc” (Gates 109), and moved Egypt’s capital from Thebes to his own newly planned city of Akhetaten, otherwise known today as Tell el-Amarna (figure 7a-b). This city, in effect, provides archaeologists with the most intact

example of ancient Egyptian urban life. For, not only did it escape the annual flooding of the Nile, but its short existence – only eleven or so years – on uninhabited land meant that the site was undisturbed until it was rediscovered in 1936. By choosing land east of the Nile that was far enough away from settled society, Akhenaten was free to build a new city unencumbered by any preexisting town plan (Pregill 73). His architects began by dividing the area into two main districts: a north suburb and then the main city, where all administrative and royal buildings were situated. From there, “it was divided into various sectors, loosely linked by a ‘Royal Road’ that paralleled the river” (Gates 110). The main city housed religious and civic buildings, gardens, a police barracks, and a ‘Records Office’, in which the immensely valuable ‘Amarna Letters’ were discovered. Aside from walls that protected a small temple and the royal palace in the north, the entire city was unfortified. The main city, however, was planned in a “strict rectilinear mode” (Pregill 73), and a main highway ran through the city linking up with the north suburbs and other residential areas. Neighborhoods in the north were oriented on a north-south axis by the main road, but, commercially, they were all self-sustaining units and generally pursued their own independent designs. Wall paintings within tombs at Thebes revealed that “a typical mansion at El-Amarna and other locations [along the Nile] was an enclosed affair, sometimes as large as three-quarters of an acre, with a main entrance [as well as] extensive gardens with pools” (Pregill 74). Egyptians who were sufficiently wealthy enjoyed highly contained and self-sustaining lifestyles all encased by a walled courtyard. These compounds boasted of wells for fresh water, gardens with trees for shade, and food that was grown on site. Inside, the homes of the wealthy were largely rectangular in form and consisted of kitchens, storerooms, dining rooms, and a central hall that was insulated from temperature extremes by the surrounding rooms (Gates 112). In the end, Akhenaten, the visionary who drafted this city, was buried with El-Amarna – one of

the few pharaohs of the New Kingdom who was not brought to Thebes and buried in the Valley of the Kings. When his successor came to power, however, this city was abandoned and its new religion was rejected (Morris 12-3). Nevertheless, Akhenaten was not the last to sketch a new city from scratch: his distant descendent Ramses II was the central figure behind the construction of both the cities of Per-Ramses and Abu Simbel.

Egypt, however, was not the only society that understood the essential components of urban planning. Its cultural rival, the Mesopotamians, occupied the fertile river valley that lay between the Euphrates and Tigris Rivers. Unlike Egypt, this culture consisted of a wide assortment of independent and self-governing city-states. As one of the earliest of these societies, the Sumerian city-state of Ur along the southern Euphrates developed into a leading power that recognized the importance of urban development (figure 1). At its height during the years 2100 to 1900 BCE, it covered an area of about 89 hectares. Ur is the most extensively excavated Sumerian city to date and, although believed to have reached a population of 34,000 people, the entire plain surrounding the city proper might have supported around 250,000 (Lampl 15). Within the walled perimeter of the city, centuries of habitation as well as patterns of destruction and reconstruction had created a large mound, or *tell*, on which the entire residential district rested. Its urban layout, moreover, consisted of three essential components: the old walled city, the *temenos* or religious district, and the outer town that lay outside of the gates. A minor canal likely ran through the interior and two harbors existed at the northern and eastern sides. The defensive wall was constructed during the reign of Ur-Nammu (2112-2095 BCE), the founder of the Third dynasty, and it surrounded the old city in an “irregular oval shape, about three-quarters of a mile long by half a mile wide” (Morris 7). The *temenos* lay in the northwestern corner and acted as citadel during its long history. But, during the reign of Nebuchadnezzar II in the sixth

century BC, this region was reorganized along a distinct rectilinear pattern, allowing for the planned arrangement of a multi-stage ziggurat, temple palaces, and government buildings.

The *temenos* at Ur was indeed ancient even by Mesopotamian standards (figure 2).

Excavations carried out by C. Leonard Woolley in the 1920's revealed

Scattered along the wall-line... a large number of small clay cones recording the building of *E-temen-ni-il* by Ur-Engur, the first king of the Third Dynasty of Ur, c. 2300 BCE.

There is some evidence to show that a *temenos* did exist before his time, but for all we know the earlier enclosure may have been on a more modest scale. (Woolley 314)

The area as a whole had been inhabited since the fifth millennium and developed according to Sumerian urban practices. Like in Classical Greece, the Sumerian cities were independent, self-governing political units, but noticeably unburdened by mountainous terrain (Gates 31). Each city along the Euphrates and Tigris Rivers belonged to an individual god or goddess that represented its social fabric. That divinity's home, the temple, was the heart of the city's religious, economic, and administrative affairs. The town grew around this religious center while incessant warfare, as a result of scarce resources, drove people from outlying areas into the heavily fortified and urbanized structure. The need for irrigation, as well as an administrative force to combat the persistent threat of salinization, engendered the palace economies of this Early Bronze Age culture. A sophisticated system of canals was put in place by ruling dynasties throughout the region in order to "bring water to the fields at the appropriate times, and to protect newly sown crops from being washed away" (Gates 32). At Ur, the cult of Nanna – the moon god and patron deity – was worshipped within the walls of the *temenos*. It was situated in the northwest because it was believed that it had the healthiest air. Such a belief "may lie behind the frequent orientation of buildings throughout the site toward the cardinal points: one side would

normally face the northwest and its soothing breezes” (Gates 58). While the religious sector ensured the city’s security by communing with the gods, the royal palace of Ur-Nammu, which lies literally adjacent to the temple, served to communicate the priests’ will to the people. The city, however, took its form not from a single, divinely inspired mind, but from a combination of social and economic factors. Power within the city of Ur was divided, just like on the *temenos*, between the king and local chairmen. In fact, “real political power was held in the hands of assemblies of elders (*puhru*) and mayors (*rabianu*). Even neighborhoods (*babtu*) functioned [like] villages within cities, with their own local government system” (Yasur-Landau 82). Urban development projects and city plans came to be as a result of local consensus. And so, “the negotiations between the royal vision and the needs of the inhabitants resulted in complex landscapes, which included...the monumental *temenos* of Ur with its imposing ziggurat, and...the winding streets and alleys of the early Old Babylonian domestic area” (Yasur-Landau 82). The *temenos* of Nebuchadnezzar fourteen centuries later, however, witnessed great transformations, such as the radical reconstruction of the central temple, which “completely changed its ancient character” (Woolley 325). His renovations, nevertheless, effectively addressed the issue of overcrowding within the religious district that had made private ritual near impossible. A two level, open court was added – the upper reserved for the priests while the lower was intended for the general public (327). By Nebuchadnezzar’s time, private congregations had superseded ancient traditions, and the city plan needed to accommodate this social change.

Woolley’s excavations also revealed the general plans of residential homes during the Third Dynasty of Ur (figure 3). These houses, owned by the moderately wealthy, were often two stories tall, “built with walls of burnt brick...and plaster and whitewash [to hide] the change in

material” (Morris 8). The walls surrounded an open air court and were fully adorned on the inside, but remained plain and austere on the outside. Courtyards had also developed over time in response to the need for privacy in this densely crowded, urban setting. The inclusion of courtyard housing in the city of Ur, furthermore, accommodated a pressing need for the people living within the walls, given the narrow and polluted streets that meandered through this urban landscape. But, “these houses...clearly represented the results of a long evolutionary process [rather than] any system of town planning” (Morris 8). The streets were in no way planned to accommodate the population, nor were they likely given much consideration by municipal officials. Houses and shops littered the city interior while small shrines were often placed at street crossings. The need for regulation was indeed recognized, however, as an omen text indicates: “if a house blocks the main street in its building, the owner of the house will die; if a house overshadows (overhangs) or obstructs the side of the main street, the heart of the dweller in that house will not be glad” (Frankfort 111). Mesopotamian building projects, at least within the secular realm, generally never carried through with any geometrically based plans. Axial approaches, or symmetrical designs, were only applied to parts of a given building under construction. For, once the general shape of a new house “has been determined – according to expediency rather than any recognizable principle, like the topographical features of the site or the proximity of existing structures – narrow rectangular rooms are arranged around large courtyards as prime planning elements in an irregular functional pattern” (Lamp1 20). Ur in all of these respects serves as an example of organic urban growth, having grown from its village origins to its final form with little to no administrative control over its expansion. It can be defined in this fashion as a *ville spontanée*. Changes at Ur resulted from ad hoc decisions made in an effort to respond to unfavorable circumstances.

Nebuchadnezzar's reorganization of the *temenos* at Ur hints at very early attempts by city planners to anticipate future growth and adequately predict the needs of a sprawling city. The famed city of Babylon, on the other hand, "has all the appearance of a planned city" (Lampl 18). Considered by Aristotle to be more of a nation than a mere city (1276a 28), Babylon, from 680 BCE onwards, was built on a simple rectangular design but covered nearly 405 hectares and may have included a population of around 500,000 (Lampl 19, figure 4). It also operated on a gridiron plan, "divided into two parts by the stone-embanked Euphrates, and with a permanent bridge" (Morris 11) that connected the eastern and western halves. Herodotus was famously awed by the sight of this urban landscape, infecting his words with his characteristic exaggeration. In his *Histories*, he describes the city as an exact square, "measuring thirteen and a half miles on each side, with a perimeter of about 55 miles" (1.178.2). Herodotus describes the height of the walls of Babylon as surpassing 100 meters, which is an entirely unrealistic figure, but indicative of the impression they had made (Van de Mieroop 2003, 262). Babylon's sheer size made it undoubtedly cumbersome: Aristotle reports that when Cyrus attacked and captured the city outskirts in 539 B.C, it took three days for the news to reach everyone (1276a 29-30). This monumentality defined Babylon, both for its inhabitants and for those on its borders.

The architecture that Babylonian engineers designed for their city, whether it was the notorious Tower of Babel or the wondrous Hanging Gardens, reflected a grand scale even in myth. For those public buildings that can be documented archaeologically, such as the Royal Palace or the Temple of Marduk, they were concentrated in a long sequence along the Euphrates, which ran north to south through the center of the city (Frankfort 112-3). The monumental "Processional Way" also ran parallel to the river in the east and exited through the famous Ishtar Gate in the north. All of this architecture served a vital purpose, for

The social importance of formality, monumentality, and other principles of planning in ancient cities lies partly in the effects that planned cities had on their inhabitants and visitors. People walking up the Street of the Dead at Teotihuacan or approaching the Forbidden City in Beijing [for instance] could not help but be impressed by the scale and magnificence of the urban architecture. (M. E. Smith 35)

Like art, architecture can mimic either the physicality of nature or the abstraction of the human experience. Properly coordinating this work of art on its urban canvas has been the hallmark of sophistication the world over. Urban planning as a discipline, however, began as a result of deliberate action by ancient rulers and their architects. In many cases, “effort and resources were invested in the coordination and standardization of urban buildings to communicate various kinds of messages” (M. E. Smith 30). These in turn could be interpreted as having high-level, middle-level, or low-level meaning in relation to their intended audience. In other words, a city plan could symbolize some cosmological purpose, an individual’s claim to power, or simply serve to elicit some behavior or emotion. The regularity of a city’s layout, moreover, was in itself a message that expressed the perpetuity of the governing body. As for Babylon, the city had been built as an image, drawing parallels through its physical design with its unique view on the universe. As Kevin Lynch theorizes, cities with highly organized power structures like Babylon, focused universally on certain principles, including “axial lines of procession, [an] encircling enclosure with gates, [the] dominance of up versus down, [a] grid layout, and bilateral symmetry” (75-9). These in turn reflected fundamental social values that emphasized order, enforced hierarchal dominance, and ultimately worked to negate the perceived effects of time, death, and lurking chaos.

Elements of an ancient city often held significant, superstitious meaning, and so structuring this space was a deliberate process. The center was sacred from which all power radiated, but the four cardinal directions, given their connection with the sun and the seasons, each served distinct purposes that varied by culture. The north brings cold weather, the south warm, and the east, unsurprisingly, is often linked with elements of birth and a new beginning, whereas the west connotes death and decay. Egypt, as an ‘Australized’, or south-oriented culture, revered the source of the River Nile and associated cardinal south with fertility and prosperity (Pearson 35). In the east, the sun was reborn each day, so funerary temples attached to the pyramids were located on their eastern side. Entrances to the tomb were located in the north, and their ramps sloped towards the pole star in the south (35). Mesopotamia, on the other hand, utilized diametric and concentric structures in its cities as a whole to reflect a natural, cosmological order. The four corners of Babylon’s double fortification wall each corresponded with the cardinal directions. Political power generated from the palace in the center – the *axis mundi* – “flowed out from the confines of the ceremonial complex towards the cardinal points of the compass” (Pearson 13). Its city design in this way portrays an underlying system of rules and institutions that emphasized the power of the state. Although this was arguably an indigenous phenomenon, the city’s urban plan is visibly analogous to the cosmological layout of the Etruscan city of Marzobotto, the Aztec capital of Tenochtitlan, or the Harrapan Dholavira along the Indus River. For all of these civilizations, despite being separated by thousands of kilometers, each saw more or less the same sky and the unique positioning of celestial bodies. But, the sophistication of their respective political structures was effectively the key in designing these highly organized, urban environments.

Although largely foreign to fifth-century Greeks, Babylon and its city plan were the logical development of a longstanding, but complex, redistributive economy. In Mesopotamia, this state-driven economy procured a number of benefits for Bronze Age society: there was “a stored stock to face future harvests and eventualities in the agricultural cycle; [a] deposit of diversified goods; [and] a material stock for long-distance exchange” (Manzanilla 11). This structure properly suited a largely agrarian society that was continuously beset by a general scarcity in resources and other environmental hindrances. Although not unlike the palace economy of the Mycenaeans, Mesopotamia was still an unfamiliar sight to mainland Greeks who had settled for private enterprise during the Iron Age. For, the economy of the Neo-Babylonian period was in many ways a continuation of its Bronze Age predecessors. As Leick argues,

The same economic agents – state, temples, the private sector – [were] present; the ecological background did not change fundamentally...but there [were] important changes, the most important being the increasing degree of urbanization at least in the north of the country [of Mesopotamia], the concomitant intensification of agricultural production and increasing importance of cash crops, and the gradual monetization of the economy. (233)

Ultimately, the palace driven economy was hindered by a single flaw. Its “over-emphasis [on] monocrops, as well as slowness in managerial response led to an increasing vulnerability” (Manzanilla 14) and precipitated the Bronze Age collapse. Nevertheless, the economic make-up of early Mesopotamian society, given its highly centralized constitution, was arguably the basis for the rise of urbanism in the first place.

City planning had its roots throughout the Near East and had grown naturally into a discernible, methodical practice in an effort to fit the needs of a highly organized and highly

urbanized people. This development, however, is not unique to Western or Near Eastern societies. Archaeological work on Harappan settlements of the Indus River valley has revealed many instances of urban design, even an orthogonal grid. At Dholavira, a classic Harappan city was unearthed “replete with cosmic geometries: orthogonal cardinality of defensive walls, a cardinal gridwork of houses and streets, a processional north-south roadway, standardized building bricks (9 x 18 x 36 cm), and monumental structures” (Malville 5, figure 8). The entire city was also oriented only a few degrees shy from magnetic north (Malville 23). On the other side of the world, the Aztec civilization had engineered their own cities according to specific plans as well. The Aztec capital, Teotihuacan, was in fact completely reorganized on a grid pattern sometime during the 450s CE. For, as “one of the major preindustrial examples of urban phenomena, Teotihuacan was a planned, multi-ethnic city [that served] as a manufacturing, exchange, and pilgrimage center for all the central highlands” (Manzanilla 27). The city was also situated on a north-south axis and was defined by its central thoroughfare, the ‘Street of the Dead’. Orthogonal grid plans, or the highly organized societies that can precede them, are not limited to a single geographical area. Like the civilizations of the Near East, moreover, Mesoamerican life was consumed by astrological phenomena and attempted to replicate the heavens on earth through their cities. The orthogonal grid appears to be, therefore, a logical culmination of urban growth in cities with highly centralized and sophisticated political structures.

Although the civilizations of the ancient Near East possessed the knowledge and the skills necessary to survey a new city or add to an existing one, they generally preferred “to work from the inside outwards” (Ward-Perkins 7). In other words, such cities as Ur, Babylon, or Tell el-Amarna were only a combination of its independent components that formed the whole. For

the Greeks, urban planning was turned on its head: “the city itself [became] the formal planning unit within which the individual buildings had to find their appropriate place” (Ward-Perkins 7). In the Greek mindset of the sixth century BCE, the individual *polis* was supreme. The city-state was an expression of their way of life and chosen method of government, which differed greatly from one *polis* to the next. However, the origins of city planning in Archaic Greece were not necessarily autochthonous. The Greeks had inherited a world left behind by the Minoans and Mycenaeans, who themselves had interacted heavily with the civilizations of the east. Through contact and commercial trade – predominantly by means of the Greek trading post at Al Mina – the innovations of Mesopotamia and Egypt reached the western shores of Asia Minor. In Miletus, Hippodamus’ native city, these ideas very likely coalesced. Following its destruction by the Persians in 494 BCE, the city was redesigned on an explicit grid pattern, at which point Hippodamus himself likely absorbed the architectural facets of its reconstruction (Gill 3-4). As Paden explains,

The city was planned to occupy the whole of an indented peninsula north of the old acropolis. Large defensive walls were built across the base of this peninsula, isolating it from the mainland [while] the city itself consisted of two separate grid patterns [that] were built on either side of a centrally located public area. (29)

The most significant component of this design, however, was not the grid plan itself, but rather the intuitiveness of its builders. As opposed to “simply rebuilding an organic city to meet their immediate needs, the Milesians planned an orthogonal city of much greater size than was originally necessary” (Paden 29).

The origins of the grid plan cannot be traced back to a single man, or to a single region in the Mediterranean. Although arguments for its Near Eastern development remain just as valid, it

is a far safer assumption, given insufficient evidence, that Ionian architects “worked out independently a system which would satisfy their own needs and their own idea of what a city should be” (Wycherley 1962, 16). The gridiron design, given its simplicity, is the height of practicality, and so it is unbecoming to discredit the Greeks for a design that can be understood and accommodated so well. The unique origins of the Greek *polis* itself may instead provide more insight into its birth and distribution around the Mediterranean.

2. The Rise of Urbanism in Archaic Greece

Despite the social complexity that has been observed regarding Bronze Age cities, civilization is an unstable phenomenon. The collapse that took place during the eleventh century left almost no society untouched, displacing populations and radically altering the balance of power in the Near East. In mainland Greece, powerful urban centers dissolved, forcing their inhabitants to emigrate and settle in areas that were more conducive to their immediate needs. The unique characteristics of the Greek *polis* developed during the Iron Age in response to these socio-political changes. Rampant piracy resulted from this sudden power vacuum, which in turn persuaded those who remained to settle further inland. Hilltops, therefore, became particularly appealing as sites for future cities. Athens, for instance, retains its famous Acropolis, Lefkandi on the island of Euboea resides adjacent to the low summit of Xeropolis, and Zagora, a town on Andros from the eighth century BC, occupies a “bluff rising high above the Aegean” (Gates 208, figure 9). However, those cities that developed strictly for the sake of security were quickly abandoned, such as Lefkandi and Zagora in the early 7th century BCE. But particular towns that could be defended well and geared towards commercial profit thrived. In this way, Greek cities generally developed with a tripartite plan: upper city for defense, lower city for commerce, and surrounding rural areas for subsistence agriculture.

The acropolis was the historical nucleus of the early Iron Age Greek city, and “at an early stage there might [have been] no distinction in meaning between ‘polis’ and ‘acropolis’” (Wycherley 1962, 5). The identity of the city itself may have been determined by its ability to defend its borders, which later translated into political power. Kings or the aristocracy governed from this vantage point, surveying the valuable, cultivatable land beneath. And, for those inhabitants who had settled in an area following the Bronze Age collapse, defense was

paramount. The early Greek city, therefore, fulfilled an immediate function to the community, ensuring its survival and directing its potential. And so, “the acropolis...remained both the symbol of a city’s independence and the last refuge for its inhabitants even after the advent of city walls” (Owens 3). All political and social aspects of a city sprouted from this instinctual choice in urban environment. For the city of Athens, the importance of its acropolis is almost self-evident: having been occupied at least as early as 2800 BCE, it is easily defensible with sheer rock faces on three sides and graced by natural springs as well (Morris 30, figure 10).

Ultimately, a city’s administrative power was expressed by its ability to protect the community at large, and it is no coincidence that a city’s acropolis also assumed a religious role as the guardian of the peoples’ welfare. Athena *Parthenos*, or maiden, was naturally the personification of this sacred guardianship for the city of Athens – an inviolate deity for an impenetrable city.

Generally, a Greek city also tended to develop around the slopes of its citadel, likely “expanding in continually widening circles around [it], or more often on one side of it” (Wycherley 1962, 5).

Athens was originally situated on the south side of its acropolis, as Thucydides describes (2.15.3), and by the fifth century it had completely encircled it, essentially forming a “circular fortress”, or ‘wheel-shaped city’ (Herodotus 7.140). This basic wheel design emphasized the central role of the acropolis, both politically and spiritually. But, these early Iron Age cities often adhered to no conscious plan: people’s homes were huddled together and adjoined by narrow, jagged streets; public buildings had no fixed pattern but tended to coalesce around the agora; and the city walls conformed to whatever the shape of the city would allow. A minimal concern for domestic comforts in this way typified Greek cultural values at this time. For, as Morris describes, a “marked contrast between the splendor of civic areas and the squalor of housing is entirely typical of Greek cities” (21). The public good by and large superseded private ambition.

And so, “in so far as the plan of the [archaic] city had any recognizable structure, this was provided by the agora and the streets radiating from it” (Wycherley 1962, 9). There was, as a result, little attention given to deliberate or proactive planning in these early cities. Those that developed during this time were of course a far cry from the complex, architectural programs of the more autocratic, Near Eastern civilizations.

Topography had a great deal of influence on the development of the Greek *polis*. Both Greece and Ionia were shaped by their mountainous terrain, leading to clearly defined territories that “came to consist of an urban nucleus, surrounded by countryside and subordinate agricultural village communities” (Morris 19). And this reality shaped the roles and functions of a city’s architectural layout. The agora, for instance, came to life, as H.D.F Kitto argues, as a result of Greece’s moderate and reliable climate. Here, the winter is only severe in the mountains, but elsewhere it is mild. During the summer, the heat “is tempered with the daily alternation of land and sea breezes” (Kitto 32). The land-locked plains of Arcadia and Thessaly prove an exception to this rule, but in either case, this situation encouraged “an open-air, communally oriented attitude [towards] life” (Morris 20). By promoting interaction among the community, as opposed to isolation from it, the agora and the effortless exchange of ideas became a reality. It also became a natural hub, attracting citizens together for political and commercial business alike. Both the agora and the acropolis served as a kind of double nucleus in the generic city, surrounded entirely by a fortification wall and outlying fields.

Over time, however, the relationship between the two changed. In political terms, “the agora constantly gained at the expense of the acropolis, until in the end it became the most vital and distinctive element in the city” (Wycherley 1962, 7). In the same way that a citadel once ensured survival for the state, the market sustained a standard of living for each individual

through the exchange of goods, ideas, and services. This transition can be identified by the kind of architecture a city employs within its design. The Greeks enjoyed some sense of monumentality, such as with the Temple of Olympian Zeus in Athens, but overall they prized functionality. Although each city-state varied in their architecture, such buildings like the *bouleuterion* (council-house), the *prytaneion* (town-hall), or the *stoas* (colonnades), all emphasized the role and function of the individual within the community. These specific buildings, in turn, worked hand in hand with the general city plan to reflect the political, social, and economic needs of a *polis* and its citizens. They originally had no fixed location within a city like Athens, for instance, “though they tended to bunch around the agora” (Wycherley 1962, 9, figure 11). Temples also congregated around this same area. Changes to existing buildings, however, naturally began to take place once civic life became more sophisticated. Even though most public buildings were initially exposed to the elements, many over time were given shelter. A *stoa*, for instance, can be regarded as “in essence no more than a roofed extension of the agora, in the form of a colonnaded portico” (Ward-Perkins 13). Theatres, moreover, were originally wooden constructions, made to be built and torn down as public need demanded. Soon, they became more permanent and their placement was entirely dependent on the terrain: a steep hillside served as a natural theater in itself and thereby allowed architects to avoid constructing any kind of substructure. The *bouleuterion* may even be “described as a theater-like place of assembly in which the seating has been enclosed within the four walls of a gabled, rectangular hall” (Ward-Perkins 13). But, the gymnasium is often seen as a latecomer to the urban scene – the “educational and cultural as well as the athletic center of a city” (Ward-Perkins 13), which could often be found only in the suburbs of an unplanned city. In this way, most public buildings, like the theater or gymnasium, were often an afterthought to the natural development of an urban

environment, since their function was largely to cement social processes that were already in place. Athens is the prime example of this preexisting momentum: its center of gravity began around the acropolis, whose history as a palace and palace cult dates back to Mycenaean times (Ward-Perkins 12). Urban life then moved gradually northwest, all the while being signaled by the appearance of public buildings even as far as the *Kerameikos* – the cemetery beyond the traditional borders of the city. And so, although the development of Athens was “not [a product] of prior planning” (Ward-Perkins 12), it provides a hodgepodge of specific buildings that would become integral to a truly deliberate and planned, Greek city.

Buildings, such as the Athenian Pnyx and the Theatre of Dionysus, specifically demonstrate the same cultural significance an open-air environment had for the majority of Greeks. The role of geography also had further social implications: even though the Greek city-state has been heralded as “an unparalleled [achievement] to modern planners” (Morris 19), the division between city and country was often blurred. City walls provided a physical demarcation, but Greek cities were inseparable from the demands of agriculture. An urban setting was almost completely dependent on the lands surrounding it. For, “[Greek] city life, where it developed, was always conscious of its background of country, mountains, and sea” (Morris 20). In fact, the economy of a Greek city-state largely relied on the self-sufficiency of the individual *oikos*, or home. A household’s livelihood traditionally revolved around the land it owned, and, by the time of Solon, the amount of a man’s produce directly determined his political influence. When all Athenians, regardless of where they lived within Attica, were huddled into the city proper at the outset of the Peloponnesian War, most were ready to leap out and confront the besieging Spartans who threatened their land. Thucydides paints the following scene:

When they [the Athenians] saw the [Spartans] at Acharnae, barely seven miles from Athens, they lost all patience. The territory of Athens was being ravaged before the very eyes of the Athenians, a sight which the young men had never seen before and the old only in the Persian Wars; and it was naturally thought a grievous insult, and the determination was universal, especially among the young men, to sally forth and stop it.

(2.21.2)

This decision would have, of course, proven disastrous, and it emphasizes Pericles' resourcefulness as the ruling archon for being able to manage public opinion and his peoples' reliance on their land as he did. The terrain played a significant role in establishing not only a city's location, but also its cultural values.

After most Greek city-states overthrew their kings around the ninth and eighth centuries BCE, aristocrats gradually began to accumulate wealth and land, supported primarily by the advent of coinage in the seventh century. Their wealth also ensured them political power as well. Their relationship with the lower class, on the other hand, brought about new political and economic challenges. During times of famine, the peasant farmer "had no recourse save to borrow from his wealthier neighbor [who] naturally found it to his advantage to sell his surplus products and store his wealth in the more convenient form of money" (Calhoun 22). Soon, the peasant population had nothing but their land left as collateral, and so even less was produced the following year. The deteriorating condition of such a large population of a city in turn heralded the rise of powerful individuals who could champion their cause. Solon, for instance, was tasked with appeasing both sides – the aristocrats and the lower class – and he instituted sweeping constitutional reform that included the *Seisachtheia*, or literally a "shaking off of burdens". Having all of their debts accounted for not only released a large portion of the population from

serfdom, but also reintroduced them into society as functioning citizens. Riding on the support of the lower class, the rule of Peisistratus soon followed with the aim of ending the city's factionist divide. Throughout this time, dictatorial powers were handed over to tyrants across various Greek city-states, and each one brought about sweeping changes that altered the urban landscape. In order to consolidate their power and rally public opinion, revenue was earmarked for specific architectural projects. Peisistratus garnered the support of eastern Attica, or those from beyond the hills (οἱ ὑπερακριοί, Herodotus 1.59.3), and, after three attempts, he captured the Acropolis and secured his rule for life. His family's almost forty year reign promoted a wide-ranging, architectural program, which included the Old Temple of Athena on the Acropolis, the Temple of Olympian Zeus, and the Sanctuary of Artemis at Brauron (Camp 38).

Temple design, moreover, was incredibly standardized by this time and consisted of a number of recognizable elements: the Peristyle, which either surrounded the whole temple or just a single side, the Pronaos (front porch), Naos (main hall), Opisthodomos (rear porch), and the Adyton (inner sanctum). Most Greek temples were built on an east-west axis, including the buildings sponsored by the Peisistratids. But, the discovery of a new roofing system changed the general layout of Greek temples. It was adapted from Near Eastern techniques in the seventh century and "encouraged symmetrical, rectilinear temple plans" (Neer 122). The process, which combined flat pan tiles with rounded capping ones on a bedding of clay or straw, employed upright buffers, or antefixes, to hold the entire roof in place. It was far simpler on account of these antefixes to construct broad, triangular pediments and gables that have now become characteristic of Greek temples. These tiles were made of terracotta and "were more durable, more resistant to water and less flammable than thatch [but] required substantial walls to support [them]" (Neer 121, figure 12). Temples, therefore, became more imposing and, because of their

increasing cost, conveyed a grander political message than the smaller shrines that predated them. Over time, the majority of Greek temples transitioned to the use of this new technology, which worked naturally alongside rectilinear plans.

Samos, like Athens, also prospered under the rule of a tyrant. Polykrates governed the island as tyrant from around 538-522 BCE and sponsored the construction of an immense aqueduct that cut through the center of the nearby Mount Castro. Known as the Tunnel of Eupalinos, it supplied the city with nearly 400 cubic meters of water per day (Lekakis) and nearly perfected a process that would not be surpassed until the Roman *Aqua Appia* in 312 BCE. Although initially lacking in fresh water which the aqueduct soon provided, the city was settled in a prime location. It enjoyed access to the Aegean and a prominent hill that served as its citadel. Its fertile land could support an abundance of vineyards to supply an active trade network. The *Heraion* sanctuary, which lay about 6.5 km west of the main city, was another feat of engineering that made Samos a cultural beacon. Attracting countless pilgrims like its counterpart the *Artemision* in Ephesus, it was a colossal Ionic temple, designed by architects Rhoikos and Theodoros c.575-550 BCE and covered an area of 102 by 51 m² (Gates 224, figure 13). Its double colonnade included eight columns on the front, ten on the back, and 21 on each side. This sanctuary was the third structure built on the site and was in fact rebuilt for a fourth time in the 520s BCE by Polykrates. Temples in general were also “the only buildings in the archaic city with any pretensions to architectural magnificence. Increasingly substantial, beautiful, and costly materials were used for them” (Wycherley 1962, 8). The *Heraion* was distinguished by other means: it was approached by a processional road that spanned the plain separating the temple from the city. Annual festivals would take place at an outdoor altar near the temple ensuring that this sacred path became the main artery exiting the city proper. The

temple itself, moreover, was oriented “directly east on an east-west axis, with its entrance on the east – an orientation that would become standard for Greek temples” (Gates 215). The placement may have had symbolic meaning, but it more importantly hints at an underlying standardization in temple design that aimed at streamlining construction. A building of this size required a considerable investment in both labor and materials. And so, mass producing the necessary terracotta was paramount. Modules, or prefabricated elements, not only made “the building process more efficient, but they also simplified pricing and payments” (Neer 134). Modular construction, as well as the regular and repetitive design it encouraged, soon became an integral component of most colonial settlements, where manpower and resources alike were often in short supply. The grid plan, in this vein, later served a similar purpose, simplifying a process that, by the fourth century, became almost integral to the appearance of a truly Greek city.

Temple architecture held a significant place within Greek culture and their location was often the very first consideration to be made when settling an area. In fact, the very practice of “marking out [a] sacred space goes along with the walling of cities” (Neer 84). The location of cemeteries, which by custom always resided outside the city walls, was also a component of early surveying. Religious buildings foster community among the settlers, but the ways in which the Greeks constructed them indicates the increasing importance that was given to zoning processes as early as the eighth century (Neer 84). The mortals, gods, and the dead all had their allotted space within the settled territory. A centralizing of political power was likely the cause of this trend: as land tenure became more structured within early Greek cities, property rights became more essential in turn. Sanctuaries were also frequently used by Greek city-states to mark the extent of their political and territorial influence. For, “it was not uncommon for a city to have at least two major shrines: one at the city’s center and another at the borderlands” (Neer

84). Corinth, for example, constructed two shrines along the isthmus – to Poseidon at Isthmia and to Hera at Perachora – in order to secure a strategically important crossroads. The city of Megara was Corinth's main rival in this territorial conflict.

Once the population of mainland Greece increased, moreover, the topography of the area was not able to support independent communities as it may have had during the tenth and ninth centuries. City-states, like Corinth and Megara, began to brush up against one another in a relentless struggle over available resources. In economic terms, the ideal site for a city was now along the coast, where access to the wider world could be secured and colonies could be established abroad. Athens, for example, which has provided the best example of the archaic city to archaeologists, transferred most of its political force away from the acropolis and towards its harbor that existed about 9.6 kilometers to the south. By the fifth century, the acropolis of Athens was a mere relic, as cherished as it was, but the harbor had become a city in its own right (figure 14). In truth composed of three distinct ports – the Kantharos, Zea, and Munichia – the Piraeus dominated the commercial life of Athens and arguably played a significant role in establishing a new, democratic form of government. After Cleisthenes' reforms, the navy had become symbolic of Athens' democratic cause: in order to resist the Persian invasion in 490-80 BCE, the Athenians had to abandon the shelter of their physical city and find protection elsewhere behind another 'wooden wall'. Their warships, in other words, protected their temporary home on Salamis and halted the Persian advance. Once the war was over and the victorious Athenians reclaimed their city, the heightened role of the Piraeus had tremendous, geopolitical implications. Xenophon, the alleged writer of the *Old Oligarch*, astutely drew the connection between "political power and those who safeguarded the military security of the state, [associating] the naval power of Athens with the increasing political power of the rowers" (Sinclair 12). All

political clout had shifted to the harbor-town, engendering a radical democracy that, in the span of a generation, stretched across the Aegean. Athens' leadership of the newly formed Delian League secured for the city an annual tribute of some 460 talents to "employ thousands of elite and non-elite Athenians as sailors and hoplites" (Pritchard 5). This new, imperial role, however, only came as a direct result of Athens' expanded naval power and development of the Piraeus. This gravitational change in administrative rule also had direct implications on the urban environment.

Around 450 BCE, Pericles commandeered the surveying skills of one Hippodamus of Miletus to arrange the limits of a new agora that could be connected with the city's harbor. Known also as the agora of the *demotai*, or citizens' market, it was "most probably located on the north side of the Zea harbor" (Blackman 197). It has most often been referred to as the Hippodamian Agora in recognition of its architect (Xenophon 2.4.11). Beyond this are the famous shipsheds, whose construction likely required about 1000 talents (Isocrates 7.66), and the street grid, which consisted of four broad avenues and two main parallel streets, as well as many more interconnecting streets (Blackman 196). The entire district supported numerous *insulae* of regular proportions (figure 15) that were settled by the ναυτικός ὄχλος (naval crowd) and metics (non-Athenians) from around Greece. The Piraeus as a whole, moreover, demonstrates the rising emphasis placed on naval power during the fifth century and the further integration of its role within orthogonal planning (Blackman 188). Between the city plans of Miletus and Rhodes, the Piraeus, however, is the only location that can be attributed to Hippodamus with any degree of certainty. The foundation of Rhodes, which is believed by Strabo to have taken place in 408 BCE (*Geography* 14.2.9, figure 16), is often dismissed on account of the architect's inferred age (Morris 27). It is also unlikely that he played a significant role at Miletus as well, but for the

opposite reason: he would have been too young. Aristotle, who is the primary literary source, discusses his connection to this Athenian port city and makes the claim that he “invented [εὔρε] the division [διάρρρσιν] of cities into blocks and...was the first man not engaged in politics who attempted to speak on the subject of the best form of constitution” (2.1267b.23-4, 29-30).

Aristotle’s words have generally been understood by city planners to mean that Hippodamus invented the rectilinear arrangement of buildings within a city (Burns 415). However, Francis Haverfield instead construes this passage from Aristotle to read: “he [Hippodamus] introduced the principle of straight wide streets, and that he, first of all architects, made provision for the proper grouping of dwelling-houses” (Haverfield 10). In Haverfield’s view, the Greek is actually misleading. Aristotle had altered the meaning of the word “division” through context in order to reference Hippodamus’ theoretical plans regarding the division of the ideal *polis*. It is clear through numerous precedents that Hippodamus was not in fact the inventor of his eponymous grid plan, but he nevertheless played a crucial role in developing the earliest divisions of space in an ancient city, referred today as zoning.

Although the modern port has engulfed its Classical counterpart, limited excavations performed here have revealed elements of a Hippodamian design. They have suggested that “the planning of [the] Piraeus integrated the existing harbor facilities with the newly laid out public areas, buildings, and residential districts, [and] that not one but several differently aligned street systems were in use in different parts of the city” (Owens 56). The incorporation of all of these features in effect constituted the nature of Hippodamus’ plan. The Piraeus has also revealed a set of boundary stones relating to its town plan. The style of their lettering hints at a mid-fifth century inception date (Owens 55). These same markers also separated public from private land, divided the city into districts, and defined the limits of public buildings. The proper division of a

city, therefore, as opposed to just the orthogonal street design, was the most significant aspect of Hippodamus' theories.

Even though the Piraeus was renovated according to Hippodamian methods, the city of Athens, nevertheless, made no effort to reorganize itself. When the Persians under the leadership of Xerxes marched into the city and razed the acropolis, the Athenians did not take the opportunity to restructure its winding streets or move the locations of its public buildings. Instead, "the city was merely rebuilt to its former irregular pattern" (Owens 52). Athens, on the one hand, has traditionally taken pride in being held to no specific urban plan, and this conservatism was common for most cities on the mainland (Wycherley 1962, 15). But, on the other hand, the Athenians were beset by the Persian threat soon after they had reclaimed their city. There was a pressing and immediate need for a swift reoccupation (Owens 52). Miletus, however, serves as a direct contrast. Burned to the ground by the Persians following the Ionian Revolt (499-493 BCE), Miletus was faced with no immediate threat for almost fifteen years until the Greeks defeated the Persians at Mycale. During this time, the city figuratively rose from the ashes, becoming the first recognizable city "to exhibit a systematic and total application of urban planning" (Gorman 151, figure 17). The city rests entirely on a peninsula and was divided into uniform blocks by straight streets all of which enclosed the agora and the civic area in the center. There were also two main districts: the north included the majority of its public buildings and a theater, while the south incorporated most of the residential areas. Interestingly, Miletus occupied but a fraction of this peninsula before these changes, but, as a result of the new plan, it was able to accommodate "the growth of the city through [to] Hellenistic times, and [by] the second century BCE, it was still following the plan laid out in the fifth century" (Gorman 153). This urban design arguably had its roots in the regular, although not orthogonal, layout that had

characterized earlier Greek cities, particularly those colonies which had been established during the eighth to sixth centuries around the Mediterranean. This change, however, was not a single event that took place directly after the Persian destruction. Parts of Miletus were in fact already structured in this way. As a result of excavations done at Miletus by Professor G. Kleiner in the Fall of 1963, a number of buildings, specifically the Old Athena Temple and the southern cross-wall, appear conclusively to have been rebuilt in situ in the aftermath of a major destruction event (Mellink 161-2). As Alfred Burns states, moreover, “the excavations show that the reconstruction in some sections simply followed the layout of the destroyed city” (Burns 419). In a number of districts, the pre-Persian city was also built in accordance with a regular street plan, which lends credence to the theory that, for the ancient Greeks, Hippodamus was merely a convenient explanation for an existing trend.

It is significant that these ideas developed first in Ionia during the fifth century BCE. By this time, eastern Greece had been a center of a scientific revolution for over a century, spurred on by contact with the Near East and the influence of various schools of thought. It is also believed that Hippodamus, like Herodotus of Halicarnassus, may have travelled to the Near East, most likely Egypt, and later witnessed pre-existing grid plans in Sicily and Southern Italy (Hammond 222). His theories on proper city design may have coalesced in the early fifth century until he had managed to cement an ongoing phenomenon into words. For, “ideas of orderly planning were in the air, and the Greeks would everywhere have found themselves exposed to the stimulus of notions which they could then develop in their own particular way” (Ward-Perkins 11). The one piece of written material believed to have been composed by Hippodamus himself – the *Urban Planning Study for the Piraeus* – has unfortunately been lost to history. At the forefront of this period of enlightenment, however, was his home town of Miletus, which was

also in command of the greatest number of overseas colonies. Pliny the Elder suggests the number was 90 (*Natural History* 5.31.4). All of these settlements provided ample opportunities for theorists to experiment in urban planning. The orthogonal grid was a practical, and almost natural, design for new colonies since it allowed for future growth and an egalitarian division of land. The true origin of this idea, however, has always proven elusive. The grid-iron system was a convenient tool for early colonists that also posed the least complications. And so, regarding the architect Hippodamus, the theories he compiled were in fact the product of a gradual, cultural development as opposed to one man's brilliant invention.

The Greek city-state underwent significant changes during the Archaic Age, both political and economic. Its development in most cases began with a clean slate following the collapse of the Mycenaeans. Bronze Age palace economies proved too cumbersome and the newly fractured world was now able to operate on a much more manageable scale. With each cultural development, however, the urban landscape continued to evolve. Attributes of a city that were intrinsically Greek, from the acropolis to the agora, determined nearly every facet of the cultural experience. As the city grew more sophisticated, the need for some kind of structure became paramount. Renewed contact with the Near East through trade and colonies spurred on new philosophical debates as to how a city could operate, which in turn followed the Greeks as they moved around the Mediterranean. The roots of the Hippodamian grid first sprouted during these colonizing ventures that predated the fifth century. Sicily and the Black Sea alike were fertile ground for these new ideas, where the concept of city planning ultimately took root in such places as Megara Hyblaia, Selinus, Akragas, and Olynthus.

3. The Role of Colonialism in the Development of the Planned City

After the emergence of the *polis* in Archaic Greece, it is often believed by such scholars as Thomas R. Martin (69) and Yu B. Tsirkin (354) that the combined stress of an increased population and limited resources compelled a number of cities to branch out to other lands in the Mediterranean. Interestingly, Plato also makes the same claim in his work *The Laws*, where he proposes alleviating population pressure through the establishment of colonies (5.740e). Nevertheless, this explanation may in fact be both insufficient and anachronistic. Unlike the Europeans who colonized the New World, Iron Age Greeks, specifically from the eighth to sixth centuries, had no notion of a “consolidated civilization from which they departed and which they wished to export” (Malkin 5, 8). They stood directly in between the highly advanced societies of the Near East and the fragmented western Mediterranean. Since literary sources from this time are scarce on this topic, the motivations for a Greek colonist to leave his home and settle elsewhere can only be theorized. Commercial interests, however, may have had an impact. Boardman argues that for “some of the earliest colonies, trade rather than land was the dominant factor in choosing a site” (162). Beginning in the seventh and eighth centuries BCE, Greek merchants had likely resumed commercial ties with the Near East, which had been historically severed during the so-called ‘Dark Ages’. The Greeks also established *emporía*, or trading centers within existing settlements, in such places as Al Mina in Syria and Naucratis in Egypt (Boardman 39, 118). The success of these ventures soon led to permanent settlements, known as *apoikia*, largely in Thrace, the Black Sea, and Southern Italy. The city of Miletus, for instance, secured over 90 various colonies, from Olbia on the Southern Bug in the Ukraine to modern day Trabzon in Asia Minor. And, in the north Aegean, the Chalcidice beckoned like an El Dorado to enterprising Greeks, specifically Chalcis to which the land owes its name. The western

Mediterranean, with its bountiful agricultural yield and trade possibilities, enticed colonists in equal measure, who hailed mostly from Corinth, Megara, and the cities of Euboea. Overall, the majority of the colonies that had been established during the Archaic Age were driven chiefly by the prospects of trade. But, they also provided ample opportunities for settlers to apply previously untested theories in urban design onto often rich, untapped environments.

The architecture that arose within each Greek colony at the moment of its foundation aimed chiefly at establishing a new cultural identity for its citizens. At this point, the urban space was a blank canvas where a community could begin anew, detached from any direct influence from their homeland. A Greek colony, however, was significantly different from what the term may suggest. Unlike Roman *coloniae*, which stemmed from the Latin *colere* (to cultivate) and that defined land as property owned by the state, Greek colonists, known as *apoikioi*, were fully autonomous individuals separated from their mother city (*metropolis*). They brought along with them their language, religious traditions, myths, and cultural identity, but they had effectively severed any political obligations to the people they had left behind. The Greeks were thereby creating entirely new and self-governing *poleis*, although there were often strong ties to the *metropolis* from which they were founded. At the moment of a settlement's formation, the leader of the colonizing group, referred to as the *ekistes*, was "accorded particular honors in the colony" (Cerchiai 12), which often included a burial beneath the future agora. Marking this spot would be a shrine dedicated to this individual, known as a *heroön*. Among the first acts in the founding of a city, however, was the partitioning of land, which involved the demarcation of boundaries and the allocation of land to each of the citizens. For, "implicit in the foundation of new colonies was the notion of equality among the members, exemplified in the division of their prime resource, the land" (Boyd 327). The division of land was in this way directly related to not only the overall

success of the colonists, but also the development of a regular urban plan. Although the archaeological evidence for this relationship still remains meager, “the planimetric nature of early Greek planning emphasizes the importance of land surveyors, [whose] practical experience in dividing and distributing land is reflected in the division of these early colonies” (Owens 48). Following this process was the construction of public areas, namely the agora, religious sanctuaries, and major thoroughfares or roads. Lastly, a *necropolis* was formed outside of the perimeter. These colonies, therefore, aimed to replicate life at home, but “compared to the *metropoleis* of Greece itself, the organization of these new developments...along with the new urban centers, could be planned more systematically and rigorously than had been those of the old cities” (Cerchiali 14). The majority of colonies in Sicily, for example, were situated as close to the sea as possible, thereby maximizing trade as well as streamlining communication.

In the eighth century BCE, when the Greeks had begun to reestablish connections with the Near East, the Euboeans opened up the west by settling the Bay of Naples and solidifying contacts with the newly emerging Etruscans in northern Italy. Like many of the other urbanized centers emerging around the Aegean, from Miletus to Megara, the Euboeans required food, metals, and other raw materials, and they sought new markets to satisfy this aim. The first city believed to have been founded on the Italian peninsula was Pithekoussai, dating to around 750 BCE, and followed immediately by Cumae (Ridgway 18). Unlike some colonies, which could only be linked back to a single mother city in Greece, Pithekoussai was in fact created through the help of multiple cities, specifically Eretria and Chalcis. And Cumae was the conglomeration of Chalcedians and Cymeans, also from Euboea (Cerchiali 12). The Euboeans as a whole benefited greatly from their relationship with the Italic peoples to the north who safeguarded the passage through the Straits of Messina and supplied them with raw materials, namely iron,

copper, and tin (Boardman 162). *Magna Graecia*, or ‘Greater Greece’ as Southern Italy and often Sicily are known, was also incredibly similar to the Greek mainland. The climate was the same, and the region supported “soil that was fit for wheat, olive, and vine – the classical Mediterranean triad” (Astour 26). In this way, the decision as to where to create a new city rested almost entirely on strategic and economic concerns.

Just as with Athens’ early foundations, the need to coalesce around a defensive position was also paramount. A steep acropolis or a secure peninsula was ideal, but the amiability of native populations – given the fact that the Greeks were not actually alone in the west – was still another variable in the decision making process. Pithekoussai, moreover, was studiously positioned on an Italic island called Ischia, allowing for the inhabitants to secure their city from assault, while still having sufficient access to mineral and agricultural resources. Strabo describes in his *Geography* how the settlers prospered for years on account of the fruitful soil and the gold mines – only to have been driven out in the end by internal strife and a series of earthquakes (Strabo 5.4.9). Coldstream, however, casts doubt on Strabo’s account, citing the scarcity of gold and precious metals on the island as well as the inadequacy of the soil. It is believed that, “given the enterprise of jewelers (sic) in ninth-century Lefkandi and eighth-century Eretria, a flourishing colonial workshop on Pithekousai (sic) would not be surprising” (225). Economically, the colonists likely secured their earnings through the export of their products back to the cities of Euboea, which in all likelihood sustained the colony in its earliest days.

The earliest of these cities to follow the example set by Chalcis and Eretria was Megara, whose people historically suffered from territorial disputes with their more powerful neighbor, Corinth. Ironically, Megara’s first colony in Sicily, known as Megara Hyblaea (figure 18), was founded only twelve miles north-northwest of Syracuse, which was itself a Corinthian colony

and had been established only a few years before (Highbarger 104). Over time, this proximity also suffocated this Sicilian Megara. But, its role in the development of urban planning was nonetheless profound. By around 728 BCE, the colonists departed the mainland city of Megara, arguably on account of political upheavals associated with swelling dissatisfaction with the ruling aristocracy (Highbarger 103). The barrenness of the soil at the time likely contributed to their expedition as well. According to Thucydides, the leader of this group from Megara was Lamis who established three colonies upon landing in Sicily, namely Trotilus, Leontini, and Thapsus (6.4.1). In fact, the tomb of Lamis has in all likelihood been traced to a cemetery at Thapsus, where a Proto-Corinthian cup was found during excavations (Dunbabin 19). After his death, however, the colonists were driven out of Thapsus. But, a native king by the name of Hyblon invited them into his land, where they founded the Hyblaean Megara. In fact, the majority of pottery found at this site and that dates to the eighth century can be traced back to Thapsus by their design (Boardman 174). This has caused chronological problems in attributing an accurate date to Megara Hyblaea – Thucydides claims it was founded six years after Syracuse whereas archaeological evidence has suggested the opposite (Boardman 175). French excavators of the city, Georges Vallet and François Villard, assessed the earliest finds from Megara and Syracuse and opposed Thucydides' claim, but they have recently revised their analysis to coincide with his words (Anderson 146). The debate may likely continue, demonstrating the difficulty in reconstructing Sicily during the early Archaic period. Nevertheless, if Thucydides is to be believed, the citizens of Megara Hyblaea also went on to colonize the city of Selinus in western Sicily a century later (Thucydides 6.4.2). Both Silenus and Megara Hyblaea were designed according to an orthogonal grid pattern, but its existence at the latter site has long been understood as the first known use within an Archaic Greek city.

Compared to its neighbor Syracuse, Megara Hyblaea was settled in a less than ideal location with much poorer access to the sea and to fertile soil. The site itself lies on two plateaux, bordered on the east by the Bay of Augusta, on the north by the Cantera River, and on the south and east by the San Cusmano River. These geographical boundaries contributed in large part to the placement of the city's many sanctuaries. Four, possibly five, have been confirmed, all of which circle the limits of the city, possibly serving as a spiritual delimitation similar to what can be seen at Naxos and Syracuse (Grupico 12-3). Through the excavation of the residential parts of the city, it is also evident that Megara Hyblaea was laid out on a grid pattern. On the northern plateau, where the majority of buildings have been found, the area was divided into *insulae* that are 100 to 115 m long and 25 m wide (Anderson 146). Each *insula* is itself divided into two allotments, and between them is a space 45 cm wide. Overall orientation is not consistent throughout the site, however. Neither is the city's overall layout. This disparity, which occurs at five different locations across the plateau, is in fact the result of a *synoichism* that took place early on between the city's five original villages (Anderson 146). They are in turn defined by a network of straight streets, but they "do not intersect at right angles, which means that the intervening *insulae*...are trapezoidal" (Nevett 128). Later settlements in Sicily address this issue by adopting a truer, orthogonal arrangement for their street plan and by standardizing a rectangular shape for their building plots. These sites, which include such places as Monte Saraceno, Himera, Epifanio, Akragas, Fiorentini, and Morgantina, all developed from the seventh to late sixth centuries BCE. And so, Megara Hyblaea can be seen as an early attempt to establish a grid-based settlement that could respond effectively to a challenging topography and the demands of its colonists.

Despite the uneven grid at the site, excavations have shown that “the earliest eighth-century houses were aligned with the streets, [suggesting] that the laying out of both the streets and the agora was contemporary with the foundation of the city” (Owens 38). The street plan was, for the most part, established within a short timeframe, but the final design of the city was not laid out all at once. The colonists began by establishing the agora and the adjacent streets, followed then by a residential area to the east along the coastline. Two major arteries ran parallel to each other through the city center. These enclosed the agora and connected the eastern city with its western half where two sanctuaries lay further beyond. Five more residential sectors soon developed, and each one was planned based on differently oriented street grids (Owens 39). At some point during the second half of the seventh century, the citizens began to occupy the southern plateau as well (Boardman 176). As the entire settlement grew, the limits of the agora proved to be insufficient to the increasing demands of the inhabitants. Therefore, its perimeter was extended, engulfing sections of the residential *insulae*. By the sixth century, a city wall was constructed surrounding the city limits.

As E. J. Owens describes, from the outset Megara Hyblaea lacked an overall, master plan. Even though it developed “in response to a changing situation...its overall layout is coherent, combining the public, religious, and private requirements of the colony into a cohesive entity” (Owens 39). Certain underlying principles can be ascertained from the city’s origin. The surveyors’ first responsibility was to designate areas for suitable purposes, and then the streets were laid down accordingly. The house plan developed as a result of the space created from interweaving major and minor streets, while the center of it all was left open for the public use. Early zoning and measuring techniques were a key component to this settlement’s foundation. This city in particular stands out from its contemporaries because of the attention it paid to land

distribution. By reserving specific plots of land for distinct applications – whether it was for public, private, or sacred use – this policy “introduced a judicial element to the planning of the city” (Owens 48). Through this, the street grid became a modulating factor in the city’s development, directly affecting the expansion of its districts while clearly distinguishing the extent of property boundaries. The streets that ran through Megara Hyblaea, however, were strangely elongated, thereby leading to the trapezoidal shape of its residential *insulae*. Unlike urban planning during the Classical period, which aimed more often to create regular house and city plans, the colonists at Megara Hyblaea did not seek pure equality when distributing land. Politics impacted this choice: the city did not truly escape the values of an aristocracy it had left in mainland Greece, and most new cities of the time made “a distinction between the initial colonists and those who came later” (Owens 49). Immigrants quite often received a less than equitable share in both land and political power. The *synoichism* at Megara Hyblaea also contributed to the irregular, urban plan, which strung together various grids created at various times on an assortment of angles. This primitive attempt at a town plan, nevertheless, set an early precedent for later colonies in Italy and Sicily.

The seventh and sixth centuries BCE witnessed a steady increase in the use of the orthogonal grid, following its appearance at Megara Hyblaea. Poseidonia (figure 19) on the coast of Campania, for instance, emerges with a similarly regular design by the end of the seventh century. But, unlike the case at Megara, its public buildings were developed independently of the street grid (Owens 41). In other words, the general layout was created before the streets were put in place. In fact, the landscape had much to do with this change. Poseidonia lay upon an outcrop of limestone, which determined the course of the city’s northwest perimeter. The presence of the limestone, combined with the swampy marshland surrounding the city, likely convinced the early

inhabitants to orient their streets, not in accordance with their temples and other buildings, but along the slope to drain excess flood water (Owens 41). Although the landscape will always influence a city's design, it is clear that the process of establishing a new colony according to any systematic plan had yet to be standardized. Selinus (figure 20) – Megara's own colony on the western side of Sicily – recognized this issue and implemented one of the most distinctive plans in the region. It was established around the same time as Poseidonia, although it is now generally accepted that the city was reorganized into a grid after its destruction in 409 BCE (Owens 45). This grid, nonetheless, was a significant leap in design, which took into account two perpendicular thoroughfares that composed the heart of the city. And their presence may have in fact lived on to influence their Roman counterparts, otherwise referred to the *cardo* (north to south) and *decumanum* (east to west) axes.

Akragas (figure 21), or modern-day Agrigento in southwestern Sicily, developed around 582 BCE with its own recognizable grid system, which was in turn planned in the beginning on a grand scale (Owens 46). Like Selinus, it was a colony of a colony, and the result of a joint effort by Rhodes and a Sicilian settlement known as Gela. Aside from Athens and Syracuse, Akragas at its peak was one of the largest Greek cities with upwards of 200,000 people (Burns 389). The city straddled two imposing rivers, the Akragas and Hypsas, while its acropolis, as Polybius describes, “[overlooked] the city from the east, its outer face bounded by an impassable ravine, its inside accessible only by a single approach from the city” (Polybius 9.27). The landscape in this way offered a uniquely powerful defense that no doubt allowed for this colony to invest more in its urban development than many of its contemporaries. Its city plan, moreover, consisted of a regular grid that spanned the distance between two hills in the east and west. Like Megara Hyblaea, Akragas produced a series of elongated *insulae*, each measuring

“approximately 35 x 200 m” (Owens 46). Six parallel thoroughfares interweaved by various minor streets also strung together the settlement. The city’s entirety fell within the confines of an easily defensible basin that, where necessary, could be supplemented by artificial walls, first and foremost around the nine known entrance gates. In all, the process of founding this colony and the act of planning its entire construction were two concurrent events. And so, this meant that “at a time when it could not have had more than 10,000 prospective inhabitants, [the city] was planned on a scale that was capable of accommodating at least ten times that number” (Burns 399-400). This flexibility, which had been offered by the advent of proactive planning, existed hand in hand with the simplicity of the orthogonal grid. Growth, as a result, could be both measured and anticipated.

Geopolitics also played a significant part in this city’s urban development. Since Akragas lay on the front lines in the ongoing conflict between the Greek states and the Carthaginians, its fortunes were inversely related to those of Africa. Akragas prospered following their enemy’s defeat at the Battle of Himera in 479 BCE, and so it set upon an extensive building program. Population soared as prisoners were brought in to fill the demand for labor. The famed Temple of Olympian Zeus appeared during this time of prosperity as did the now lost *kolumbethra* – a resplendent fish pond over twelve meters deep formed by the convergence of spring water from outside the city (Diodorus Siculus 11.25.3-5). Military victory and astute city planning came together to create a life of ease for the inhabitants. The renowned philosopher, Empedocles of Akragas, is said to have described the mindset of his fellow citizens in the following way: “The Agrigentines live [luxuriously] as if tomorrow they would die, but they build their houses well as if they thought they would live forever” (Diogenes Laertius 8.63). The citizens constructed temples, city walls, and a system of water channels, aqueducts, and drains all in an effort to cater

to their growing population. And, at the same time, their city expanded along predetermined paths, which their founders designed from the outset to be both minimalistic and equitable. But, during the final years of the Peloponnesian War, the city – now a democracy – was nonetheless taken by the Carthaginians in 406 BCE.

City planning in the Archaic Period was no doubt a sign of luxury. When the population of Athens returned to their devastated city following the Persian sack, little effort was made to alter their urban layout as Miletus had done in 494 BCE. Instead, refortifying the city was of supreme importance. In his *Life of Themistocles*, Plutarch describes how this eponymous statesman of Athens set about building the famous Long Walls, which connected Athens with its port city at Piraeus. Although the Persians were still a threat at the time, he recognized the danger posed also by the Spartans, who by now had begun to see themselves as the rightful hegemon, or chief leader, of the Greeks. Themistocles, it is said, tricked the Spartans by gaining an audience with their magistrates and dispelling any rumors that such walls around Athens existed. At the same time, he invited Spartan ambassadors to his city and had them taken hostage, knowing he would be detained once the truth was revealed. As a result, he managed to stall the Spartans for enough time so these fortifications could indeed be completed. Realizing that they were outwitted, the Spartans, concealing their displeasure, were forced to release Themistocles and allow Athens to resume constructing their walls (Plutarch 19.1-2). After this, the city of Athens became almost impregnable, since no army of Sparta had the means to breach its walls or disrupt its unlimited access to the sea. Themistocles recognized the immense advantage gained by securing the Piraeus and, if need be, by gathering the population of Attica into one place behind a wall of stone. Nonetheless, Thucydides hints at the urgency of its construction, stating that “to this day the building shows signs of the haste of its execution; the

foundations are laid of stones of all kinds, and in some places not wrought or fitted...and many columns, too, from tombs and sculptured stones, were put in with the rest” (1.93.2). Athens was surrounded by potential enemies, both Persian and Greek, and so few resources could be spared to change the way in which their city itself was laid out.

A similar defensive strategy as this took place around the same time in the northern Aegean. The people of the Chalcidice (figure 5) faced two major threats in the mid-fifth century, either from the Persians recovering in the east or the Macedonians expanding in the west. The population on this peninsula was largely composed of Greek immigrants from Euboea and Andros, although native Bottiaeans had occupied the area, which was known as Bottike (q.v Cahill 24), throughout much of the Archaic period. Together, they inhabited a number of city-states whose allegiances by 432 BCE were split uneasily between Athens and its Peloponnesian neighbor, Corinth. This geo-political clash came to blows at Potidaea, where Macedonian and Corinthian influence managed to persuade these people to revolt against Athens and the Delian League. Athens subsequently besieged the city – also a Corinthian colony – and delegations from the major Greek powers all met at Sparta to formally declare war. At this point, Perdiccas, king of the Macedonians, convinced “the Chalcidians to abandon and demolish their cities on the seaboard, and, settling inland at Olynthus, to make that one city a strong place” (Thucydides 1.58.2). Known as an *anoikismos*, or a moving inland, this large scale migration effectively did the same for the city of Olynthus as had been done for the city of Athens half a century earlier. Throughout much of the Peloponnesian War, Olynthus (figure 6) prospered on account of the increased population, unrivaled access to abundant raw resources, and an easily defensible location that straddled two, flat-topped hills rising about 30-40 meters (Cahill 23). Xenophon, moreover, relates that the city “possesses ship-timber and has revenues from many ports and

many trading-places, and likewise an abundant population on account of the abundance of food” (5.2.16). Despite being located about 2.5 km away from the sea, Olynthus nevertheless had access to the Aegean through a port city called Micyberna. It, along with such places as Stolos, Assera, and Singos, were likely the central members of this Chalcidian League (West 33).

Although Olynthus began as an insignificant inland settlement, contributing a mere two talents a year to the Delian League (West 26), numismatic evidence reveals it to be a central part of Chalcidian identity. Coins that had been found at the site after the year 479 BCE – when the Persians released the city to the Greek settlers – “show that a feeling of kinship and unity existed among the Chalcidians of Thrace as early as the beginning of the fifth century” (West 25). The population shift that took place in 432 BCE no doubt strengthened these ties and set the stage for Olynthus, as head of the Chalcidian League, to rule the region much like a federal state. For, “it would be natural for the Chalcidians to regard [the city] as a common possession in which all had a part” (West 25). Thucydides, furthermore, frequently refers to the people of the area as a single unit, especially following the revolt at Potidaea. The league is routinely referred to as either the Olynthians or the Chalcidians (Thucydides 1.58.1-2, 5.82.1). During much of Thucydides’ narrative, “the Chalcidians wage war as one people; that the army is almost without exception called Chalcidian; [and] that the Chalcidians by concerted action destroyed their sea-coast towns and strengthened (sic) Olynthos” (West 28). Whether this can be attributed to a mere oversight by the author or not, this sense of federalism can, nonetheless, be seen by the ways in which the Olynthians planned their new city.

Like Athens during the war, Olynthus faced similar challenges at accommodating the influx of presumably thousands of other Chalcidians who were migrating to their city. Unlike Athens, however, Olynthus took the opportunity to extensively plan out a regular grid of mostly

residential houses that expanded its perimeter to the north. The southern hill, which borders the Sandanus River, or the modern day Resetnikia, was part of the original settlement and consists of an irregular layout with a simple network of streets. The northern hill, on the other hand, was “laid out in an orthogonal plan which, with some irregularities, extended over the entire hill” (Cahill 27). This part of the city was central to its expansion project. As a result of excavations performed by David M. Robinson in the early 1930s, it is believed that “this district encompassed perhaps 360 houses, suggesting a population here on the order of 2000-3000 people” (Cahill 2000, 497). In this area, houses were built in “blocks of ten, composed of two rows of five houses separated by a narrow alley” (Cahill 27). The street layout was oriented according to the four cardinal directions: ‘avenues’, as the excavators described them, defined the north-south arteries and ‘streets’ the east-west ones. The plan of this part of the city, moreover, is so rigidly uniform that it is likely the entirety of the North Hill was conceived within a very brief span of time. The similarity in the construction of the walls of the houses also indicates the synchrony of the North Hill’s layout (Robinson 1932, 120). And, to the east, in an area that lay beyond the original extent of the city walls, was the so-called Villa section, which Robinson named for its more luxurious looking buildings (Cahill 2000, 497-8). Here, such buildings as the Villa of Good Fortune, the House of Many Colors, and the House of the Comedian, were largely oriented in a similar fashion as the less ostentatious houses on the North Hill. However, there are greater gaps in between these villas, some undeveloped places, and a noticeably inconsistent arrangement, which all together hints at a change in how the land itself was divided and distributed (Cahill 30). This area was, as Robinson concluded, settled by the more affluent, whose division of the land may have been decided upon on a more individualistic basis than elsewhere at Olynthus. Nevertheless, the various components of this overall, urban

layout worked well to accommodate the changed status of the city. Although defense was its *raison d'être*, Olynthus managed to exceed its own limitations, transforming an otherwise irrelevant hilltop town into a beacon of cultural and economic prosperity.

For the Chalcidians, Olynthus was an experiment in social cohesion. The independent *polis* was abandoned in some parts of the peninsula in favor of a federal state that promised collective security. The people of the Chalcidice, in contrast to almost any other Greek at the time, had the greatest potential to unite together and supersede their own individual differences. And they specifically designed their new capital in a way that could appeal to both the interests of the people and the constraints of time. The Hippodamian plan, which appears in its most conspicuous form at Olynthus (figure 23), allowed for growth in the city to be a measured and predictable affair. It was, however, the culmination of centuries of experimentation by other Greeks on both sides of the Mediterranean. The colonies of Magna Graecia betray some of the earliest indications of large scale city planning, and “thanks to the finds at Megara Hyblaea we now know for certain that a neatly rectilinear, near-orthogonal layout could be applied to a Sicilian Greek colony as early as 650-600 BC” (Ward-Perkins 24). From there, what becomes known as the Hippodamian plan coalesces at Akragas and Selinus. For, in regards to the former:

The possibilities of the site [of Akragas] were realized, and the spacious layout of the town and the magnificent siting of the temples show that architects with powers of vision were at work, architects who were also fine planners and who did not think merely in terms of isolated buildings. (Wycherley 234)

This introduction of town planning marks a significant progression in the development of the Greek *polis* throughout the Mediterranean. Its beginning in the Archaic Age sets the stage for centuries of trial and error, ultimately culminating in a plan that offers a much more modern

approach to urban problems. The city could be interpreted as a conceptual whole. Nevertheless, even by the fourth century “Greek town planning was the very opposite of academic, and as far as we can tell there was no recognized body of theory” (Wycherley 1951, 29). Hippodamus was merely a stepping stone in this development, but the cities which took to this emerging idea of systematic planning were, nonetheless, attempting to bring theory down from the clouds and give it substance. For the Classical Age, this time of experimentation largely came to an end at Olynthus. Its affluence depended on more than simply theory, but rather the continued good will of the neighboring Macedonians. After only eighty-four years since the *anoikismos*, relations between the two states eroded, and Philip II swept down from the north, captured the city, and razed it mercilessly to the ground. Nevertheless, had this event not happened as it did in 348 BCE, the urban plan at Olynthus would not have been so well preserved, making the site one of the most pristine examples of city planning from Classical Greece.

4. A Hippodamian Case Study: Thurii and the Implementation of Urban Theory

As much as Olynthus appears to have adopted the central characteristics of Hippodamus' vision, this Chalcidian design, together with the handful of others from Magna Graecia, cannot truly be considered 'Hippodamian'. Although the city's orthogonal grid is perhaps the best preserved example of Greek city planning up until the Hellenistic period, it can say very little about the philosophy and the theories of Hippodamus himself. One city that can, however, is known as Thurii (Thourioi) in southern Italy, despite its dubious connection to Hippodamus as its architect. Scant evidence exists, but the lexicographers Photius, Hesychius, and Harpocration do refer to Hippodamus with the surname *Thurios*, so "if the emendation is correct, [then] Hippodamus joined the migration to Thurii" (Burns 419). The site adheres to a Hippodamian style plan, and it is unlikely that an architect who achieved fame at the Piraeus would not be drawn to advising on another Athenian project. Most scholars, therefore, agree that a relationship existed on some level between Hippodamus and Pericles, the man who instigated the Thurian expedition (Plutarch *Life of Pericles* 11.5). Thurii, moreover, was intended by Pericles to be a Pan-Hellenic colony, and invitations were even sent to the Peloponnesians, although neither Sparta nor Corinth appear in the *phylae* that detail the city's founding (Ehrenberg 153-4, Perlman 15). A large majority of individuals came from cities associated with Athens, and the democratic division of the citizen body at Thurii into ten tribes "clearly point to Athenian leadership and influence" (Perlman 16). In this way, the expedition became a veritable who's-who from Classical Greece: Herodotus of Halicarnassus, Protagoras of Abdera, Empedocles of Akragas, and the orator Lysias are all described as being members (Fleming 8). It is also a point of consensus in today's scholarship that Hippodamus was indeed present as well, but with the following caveat: "one should keep distinct...Hippodamus the theorist from Hippodamus the

builder of Thourioi. The city's plan cannot have been the creation of a single architect; rather, it resulted from his interaction with the community which commissioned the job for him" (Greco 116). Even though it is only conjecture, it is difficult to imagine that these important individuals did not try to use this opportunity to etch their own unique mark onto the city. Hippodamus' political philosophy, which appears only briefly as a straw man argument in Aristotle's *Politics* (2.1267b 22), chiefly advocated for an ideal, political constitution. This in the end worked concurrently with the idea of a pre-planned city, becoming "an attempt to master the influences of the ground, of tradition, and of mere chance, by a purely rational pattern" (Ehrenberg 166). Thuriis was not only a conglomerate of different peoples from around the Greek world, but also an experiment in the application of urban theory.

The first problem, however, that accompanies any discussion of Thuriis is the glaring lack of archaeological evidence. The city itself lies buried beneath a five meter deep alluvial deposit, and its ruins have been built over by a later Roman town called Copia (figure 24, Fleming 13, Greco 109). It is generally understood, through readings of Diodorus (12.10) and Strabo (6.1.13), that Thuriis occupied a site close to ancient Sybaris and in between two rivers (modern day Crati and Coscile). The archaeological record at Thuriis is, therefore, closely tied to Sybaris. In fact, more has been revealed about this Archaic city than its Classical counterpart: "the concentration of archaic pottery in the Parco del Cavallo area on what appear to be ancient and buried sand dunes along the old shore line [of the Crati river] undoubtedly mark the port of Sybaris" (Rainey 261). Boardman also relates the discovery of Thapsos class pottery, associated with the Archaic city, and the possible existence of a shipyard (179). The location of Sybaris itself was found definitively as a result of a 1968 revisit to the area, which utilized magnetometry and drilling methods as opposed to a large scale excavation (figure 25). However, the site of Thuriis is less

well-known, and the evidence that has been gathered about the city's location has begun to conflict with the prevailing narrative (Rainey 272). The true city of Thurii was likely further south than anticipated. A detailed analysis of this new location, which was conducted by the Archaeological Superintendency of Calabria between the years 1969 and 1974, revealed around five hectares of ruins superimposed by both Sybaris and Copia (Greco 109). Five out of the seven known Hippodamian streets can be ascertained through study of the Porta Nord, or the northern gates of the Roman city, as well as the Parco del Cavillo (figure 26a-b). Castagnoli, moreover, argues that "the great majority of buildings brought to light [here] maintained the urban plan of Thourioi" (Greco 112).

The most extensive account of the Hippodamian city can be found in Diodorus' *Historia* (12.9-11), which describes both the circumstances of its origins and the details of its final layout. Cahill provides a speculative illustration of the city plan drawn from this source (figure 27, Cahill 21). Thurii was likely founded around 444/3 BCE (Castagnoli 18), as a result of a feud that took place between the cities of Croton and Sybaris beginning in the second half of the sixth century. The date of its foundation is uncertain, as most are concerning the life of Hippodamus and his works, and it hinges largely on the level of trust that can be placed in Diodorus' version. He "puts the whole affair under the archonship of Callimachus, that is to say, in the year 446/5 [but] another tradition [Pseudo-Plutarch] mentions the archon Praxiteles of the year 444/3" (Ehrenberg 150). Most scholars opt for the later date, since it is generally believed that Diodorus conflated the year of the expedition with that of the actual colonization. Regarding the layout of Thurii, Diodorus explains how the city was divided lengthwise by four πλατεΐαι, or wide streets, and breadthwise by three, known as στένωποι, or narrow streets, and then subdivided by more in between (Greco 109). In fact, he provides names for each of these major roads: the πλατεΐαι were

called the Herakleia, Aphrodisias, Olympias, and Dionysias, while the *στένωποι* were referred to as Heroa, Thouria, and Thurina (12.10.7). The city's interior was then partitioned into large sectors by these seven avenues in order to create regular blocks of houses. All in all, the city's plan "bears a general resemblance to [the] Piraeus" (Owens 57), which Hippodamus is also believed to have designed. The overall layout fits perfectly within Hippodamus' parameters: the use of the orthogonal grid and the appearance of zoning both suggest that his ideas were implemented, whether he alone had a direct hand in planning Thurii or not. In either case, Diodorus states that the city prospered and grew to an impressive size of around three hundred thousand citizens (12.9.2).

Thurii began as a way to compensate the people of Sybaris for its destruction at the hands of the Crotonites. Their feud, which had its roots in economic rivalry, drew in the attention of the major powers in Greece. Sybaris reached out to Sparta first, on the basis of their shared nationalities, but they ultimately refused. Athens, on the other hand, was in a better position to send assistance overseas, and they provided ten ships to Sybaris. Leadership of this enterprise was given to two Athenians, Lampon and Xenocritus, in order to lead an expedition to found a new colony for the Sybarites (Diodorus 12.10.3). Invitations were sent to individuals around the Peloponnesus, of whom many accepted. The new colonists followed the advice of an oracle and settled near a spring, known as the *Thouria*, where they found "water to drink in due measure, but bread to eat without measure" (12.10.5). This specific location, however, has been largely disproven, as mentioned previously: "All the archaeological evidence points to the conclusion that Thurii was built over the southern section of the city of Sybaris, which does not accord with the statement of Diodorus Siculus [regarding] a spring called (sic) Thouria" (Rainey 272). In either case, walls were constructed, streets were laid out, but after a short period, the new city

suddenly fell into disorder. The native Sybarites had begun to exclude these immigrants from higher offices and proceeded to apportion only the best lands for themselves (12.11.1). After a period of violence, the city was reconstructed, more colonists were invited, and its laws were readdressed. Most likely, Hippodamus exerted his influence again during this development, while Protagoras assisted with the city's legal system (Dawson 23). At this point, the Thurians established a democratic government, divided its citizens into tribes, and distributed the land equally among its citizens. According to Diodorus, the Dorian element predominated during this part of the city's foundation, controlling six out of the ten tribes (12.11.3). By the outbreak of the Peloponnesian War, the city had become a significant ally for whichever side – the politically equivalent Athenians or the ethnically akin Spartans – managed to persuade its citizens. Thurii, as Thucydides explains, was not only the place where the Athenian reinforcements landed in order to “muster and review [their] army” (7.33.6) before sailing against Syracuse, but it was also where Alcibiades sought refuge from Athenian authorities before disappearing in order to aid the Peloponnesians (6.61.6-7). The governing body at Thurii changed hands throughout the Peloponnesian War: they aided the Athenians while en route to Sicily in 413 BCE, but later supplied ships to the Spartans in 412/1 BCE (8.35.1). The reality of the city's bilateral outlook became one of the many snags that developed in Pericles' plan to extend Athenian influence westwards.

The most significant aspect of the city of Thurii has been its connection to the political policies of mid-fifth century Athens. Although the term *Pan-Hellenism* is entirely modern, the characteristics of Pericles' plan for Thurii reflect an increasing cultural awareness of a national Greek identity. The Greeks all shared a common language, and their religious and cultural values rarely differed from region to region. Thurii itself became a microcosm of this reality.

Nonetheless, “Panhellenism as the achievement of greater unity among the Greek states was never a goal among the Greeks [but rather] a tool of political propaganda serving, first and foremost, the hegemonial and imperialistic aims of the Greek polis” (Perlman 30). Athens especially was no different. Lampon, one of the two Athenians who lead the expedition, was also a seer, and this vocation served the singular purpose of sanctioning Athens’ leadership within the colony. Lampon was not alone, but was instead joined by many other diviners. Aristophanes in fact coined the word *Θουριομαντεις* specifically to “indicate the soothsayers connected with the foundation of Thurii” (*Clouds* 332, Ehrenberg 164). Their presence at this colony was also an essential link to the religious center at Delphi. This city had a natural claim on the act of colonization, particularly on an enterprise that also claimed to be Pan-Hellenic (Ehrenberg 165). It was not only the home of the god Apollo, who was known by many Greeks as *Archegetis*, the leader or protector of expeditions (Sacks 35), but also of the Pythian Games. Together with the Olympian, Isthmian, and Nemean, it formed one of the four religious festivals that took place around Greece over a span of four years. These expressed a distinctly Pan-Hellenic spirit disguised in the form of a competition. They were, in some respects, the only opportunity one city-state could witness the merits of another aside from on the battlefield. Any outright sentiment of unity among the Greeks, however, was not greeted with much affection during the sixth and fifth centuries BCE. For behind any message of hegemony, as all Greeks feared, was the realization of tyranny. This apprehension, for example, was the basis for Thucydides’ explanation of the Peloponnesian War: “the growth of the power of Athens, and the alarm which this inspired in Sparta, made war inevitable” (1.23.6). It also gave cause to the prejudicial actions of the Sybarites when new colonists from around Greece began arriving in their territory (Diodorus 12.11.1). Pan-Hellenism was not necessarily a precursor for peace in Classical Greece.

In this same way, the expedition in the year 444 was for Athens “a means towards imperialistic expansion in a completely new direction, to the west” (Perlman 14). It was, as such, a complete departure from Athens’ usual policy, which had previously focused exclusively on the Aegean and Asia Minor.

The foundation of Thurii was entirely superficial in its Pan-Hellenic aims. Although the democracy at Thurii did not always remain faithful to the Athenian cause, the institution was the outcome of the same political thought that had engendered Athenian imperialism elsewhere:

To found a colony with the greatest possible variety of colonists, to appoint leaders who were all Athenians and adherents of Pericles..., to make the new State a democracy based on ten *phylae* like Athens and on a well-founded expectation of Athenian leadership – the “Periclean”, that is to say, democratic and imperialistic, character of the policy which led to the foundation of Thurii could scarcely be made more obvious. (Ehrenberg 160)

In other words, the Athenians intended not only to dominate those cities which had already turned to democracy, but also to control any non-democratic thinking by means of the city itself. It is traditionally believed that Hippodamus’ grid plan had democratic, or egalitarian, implications, and if true, then the architect’s theories were likely used for these purposes, particularly if at the behest of Pericles. The connection between grid planning and democratic thinking had a burgeoning history within Athens in the fifth century. The reforms of Cleisthenes, for instance, aimed at “creating an institutional system in which...the city [was] designed on the basis of a spatial plan; tribes, *trittyes*, and demes are drawn on the ground, like just as many realities that can be recorded on paper” (Mazza 126). A rational allocation of space worked in parallel ways to a democratic division of a city’s people. Thurii notably imitated the class divisions that were seen at Athens and divided itself into ten tribes according to ethnicity.

However, since Athenians were a minority in their Italian colony, their political ideology alone likely could not afford them the influence necessary to control Thurian affairs. It is possible that Pericles tried to offset his disadvantage by bringing in Hippodamus, Protagoras, Herodotus, and Lampon, all of whom had close connections with the city of Athens and Periclean policy (Perlman 15). It also seems clear that Hippodamus served a particular purpose within this colony. His reputation was already well established by this time. Although his writings are entirely lost to history, it is believed that “Hippodamus’ *Politeia* must have included a chapter on his town-planning theory [which makes him] possibly the first architect to propose such theories” (Greco 116). This connection he makes between city policy and city design further associates him as one of the earliest political philosophers. Therefore, his grid design “may represent an attempt to create an urban space that reflects political space” (Mazza 126), rather than simply a physical “division of cities” as spoken by Aristotle (τῶν πόλεων διαίρεσιν 2.1267b 24). Hippodamus’ theories, which provided another means to ensure democratic sentiment within a colony, no doubt made a significant impression on Pericles and may have been the reason for his work at Thurii.

The act of writing a constitution and tracing a grid, moreover, are symmetrical concepts. Ideally, they aim to sync the concept of equality of land with equality of law: “one citizen one vote, each block equal to the others” (Mazza 127). Hippodamus opted for a tripartite division within his ideal city, advocating for the separation of religious buildings from zones that were dedicated specifically for public and for private functions. The street grid, furthermore, was to be “regularly subdivided into wide parallel strips by a very few (usually only three or four) major longitudinal arteries [but] aside from the strictly rational and geometric form, the grid exemplified certain criteria of absolute equality among residential blocks” (Castagnoli 129).

Egalitarianism was a hallmark of Hippodamian philosophy, and this extended to the law as much as to the land. Hippodamus called for three divisions of justice, in which one court dealt with insolence, another for injury, and a third for homicide. According to Aristotle, “he also proposed to establish one supreme court of justice, to which were to be carried up all the cases at law thought to have been decided wrongly, and this court he made to consist of certain selected elders” (2.1267b 39-40). An underlying Pythagorean influence, moreover, is believed to have been present in Hippodamus’ theories. Numbers held a kind of mystical importance for the Pythagoreans, and Hippodamus makes use of the number three in nearly every component of his city, namely the class division, the city zones, and the classification of laws (Hogan 767). This fact heightens the socio-political function of the city, where “the simple notion of equality is superseded by notions of arithmetic, geometric or harmonious equality” (Mazza 127). For Hippodamus, politics, arithmetic, and urban theory all coincide to form the perfect constitution, and Thurii was fertile ground for this architect to test his theories.

The Pan-Hellenic project that Pericles had advocated most likely appealed to such important figures as Herodotus and Protagoras on account of its utopian sentiment. Thurii marked a new beginning for many idealistic Greeks, who, living in a time of intellectual promise, may have relished the idea of reforming the traditional *polis*. Although it would be, as David Fleming explains, “misleading to describe the expedition of 444 as an attempt to implement a Utopia, the town does appear to have been planned as a kind of model polis and is usually so described by modern scholars” (Fleming 5). A. E. J. Morris (27) and E. J. Owens (57), for example, both conform to this suggestion. Hippodamus’ philosophy also differed from that of other idealists, such as Plato in the *Republic* or the *Laws*, because “his constitution was supposed to be a practical model, not a utopia” (Dawson 23). Hippodamus likely intended to bring

substance to his theories by implementing them specifically at Thurii. The complexity of uniting dissimilar, Greek contingents, for example, “offered a challenge to his concepts of how to create and plan the ideal state” (Owens 57). Brought together by the democratizing effects of the grid plan, the people of Thurii could, in his mind, enjoy the benefits of equal land distribution as equal citizens. As such, the importance of the Hippodamian grid “is not so much its straightness as the way it divides a city into uniform precincts or lots” (Fleming 16). Aristotle, despite the criticisms that accompany his description of Hippodamus, does find some value in his design: “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 Hippodamus” (Aristotle 7.1330b 21-3). Zoning, furthermore, becomes the second priority of the Hippodamian city, since it allocates the land according to an overall, master plan. This plan – the combination of public, private, and sacred sectors – provides a unified vision of the city for its inhabitants, no matter how distinct they may be as individuals. As Fleming states, the process of dividing a city into zones turns “the city [into] the preeminent unit of political life, rather than, say, the tribe, the empire, the royal family, a social or economic class, or territory itself” (17). The grid disconnects the people, but simultaneously fuses them together into a coherent and purely rational union.

Nonetheless, Aristotle makes a point to degrade this architect as an eccentric sophist with a flawed *magnum opus*. His personal quirks, moreover, are among the first things that Aristotle describes about the man: “[he] became somewhat eccentric in his general mode of life due to a desire for distinction, so that some people thought that he [took needless trouble], with [long] hair and expensive ornaments, and also a quantity of cheap yet warm clothes not only in winter but also in the summer” (Aristotle 2. 1267b 22, 24-6). Therefore, not only might rumors have

been circulating around Athens about his odd behavior, but Aristotle appears driven to discredit Hippodamus from the beginning, “as though to warn his [own] pupils that this was not a thinker to be taken very seriously” (Dawson 24). His criticisms of Hippodamus are not, however, inconsequential. Among the greatest faults that Aristotle points out is the manner by which his city is divided. If the artisans, the farmers, and the military all have the ability to participate in the government, as he explains, those without access to weapons effectively become “the slaves of those who do possess the weapons” (Aristotle 2.1268a 20). Although not seen at Thurii, it is generally believed that the Hippodamian state would have been modeled closely on Sparta. In fact,

It was obvious to all in the late fifth century that Spartan military superiority, still unquestioned on land, was the result of cultivating a hoplite class devoted exclusively to military training; it was inevitable that Sophists interested in the best constitution should look closely at this institution, even if their sympathies lay with democracy. (Dawson 25)

The Hippodamian city was to be divided in such a way that the soldier class could be completely sustained by the farmer class, and thereby free to concentrate solely on military affairs. Although not made explicit by Aristotle, it is certainly implied that those who were not trained like a Spartan would effectively become no different than a helot. In other words, the combination of a democracy and a military elite is entirely impractical, at least without modification (Dawson 25). Hippodamus lived during a time when Laconic sympathy was at its height in Athens and he was likely among the first to give voice to this admiration, specifically within a philosophical treatise. This political sentiment, however, was not without its drawbacks, and most Athenians with this opinion held significant reservations about the Spartan constitution. Nevertheless, “despite the fundamental incoherence of his system, Hippodamus was a thinker of seminal importance: the

first to write something that we can recognize as a utopia [and the first] to conceive the possibility of a written constitution as a synthesis of elements drawn from existing constitutions” (Dawson 26).

Aristotle’s harsh treatment of him, moreover, may be the result of his actions at Thurii, a city which ultimately fades into obscurity within a century of its founding. As the focus of an expedition that espoused the virtues of Pan-Hellenism, it is not unreasonable to regard Thurii as a failure in this respect. The city also, as mentioned, quickly fell into *stasis*, or disorder, within a few years (Diodorus 12.11.1). This was largely the result of social incompatibility between the native Sybarites and the immigrating colonists, and this fact was universal in the Greek world, extending to the city of Olynthus as well during its *anoikismos* (Cahill 19). Hippodamus’ model *polis* attempted to solve political inequality by introducing the grid, but the process of planning an entire settlement, from beginning to potential end, was a strikingly new and untested phenomenon. Fundamentally, there is a tension that exists between theory and practice: a philosopher’s ideal cannot account for change, which is a factor that is ubiquitous to the life of a city. In other words, “land [is] bought and sold; divided among multiple offspring; or united through marriage, purchase, or rental. The principle of equal allotments of land... was counterbalanced by inequalities in status and wealth among the citizen body” (Cahill 19). The Sybarites, according to Diodorus, almost immediately sought to deprive the newcomers of political rights and free access to land, which inevitably led to a large group of disaffected and discontented inhabitants. The problem of unifying a composite population was later addressed by Aristotle: “hence most of the states that have hitherto admitted joint settlers or additional settlers have split into factions” (Aristotle 5.1303a 26-7). While his motive may be suspect, Pericles had

attempted to bring social order to the city-states of Southern Italy, which had repeatedly collapsed into tyrannies and factious oligarchies.

If his presence at the city of Thurii is true, Hippodamus worked alongside the most brilliant philosophers and writers of his time, having come to the city with a reputation as a seminal theorist in political science. His conjectures regarding an ideal city were not lost on the Greeks but notably make their way into both of Plato and Aristotle's works: Plato constructs his own "almost-utopia" called Magnesia in his *Laws*, while Aristotle devotes his entire second book in his *Politics* cross-examining all real or proposed constitutions in order to justify his own (Cahill 5). Consequentially, it can be presumed that the architect had a profound impact during his time. His greatest innovation, as Fleming describes,

Consisted in realizing that the form of the city was the form of its social order, and to remold one it [was] necessary to introduce appropriate changes in the other. He seems too to have realized that town planning should have not merely an immediate practical aim, but an ideal goal of larger dimensions; and he thought of his art as a means of formally embodying and clarifying a more rational social order. (Fleming 18)

The social order at Thurii was intended by its very nature to be democratic and an extension of Athenian power in the west. This fact was realized through its grid plan, in which all of the houses and many of the public buildings benefited from an egalitarian distribution of space. Thurii in turn comes to embody the characteristics of the enigmatic Hippodamian city. For, "unlike organic cities, in which no explicit provisions were made for individual houses, the Hippodamean city was designed in a democratic fashion to make equal room for the house of each citizen" (Paden 34). This differed entirely from the impetus which gave rise to such grid layouts as at the Egyptian Tell-el-Amarna or the Sicilian Megara Hyblaea. Both cases prove that

the orthogonal grid existed long before the time of Hippodamus, but his legacy owes more to his creation of a well-defined system that correlates a societal identity with geographic divisions.

Conclusion

The Classical period witnessed a renaissance of intellectual interest in urban development, which had found its roots over the previous century at Miletus, the home of Hippodamus. David Fleming explains this city's unique influence:

Several things about Miletus make it a propitious site for the development of town planning. First, the city was an important point of contact between the west and the east, where the regularly planned town is thought to have originated; second, it was a leader in colonization and therefore accustomed to planning new towns...; third, it was a center of rational speculation and mathematical innovation in the Ionian tradition (Thales, Anaximander, and Anaximenes were all Milesians); and fourth, Miletus was itself destroyed (494 BCE) and rebuilt (479 BCE)...something that Hippodamus may have participated in as a young man or observed as a boy. (Fleming 13)

Following this reconstruction in 479 BCE, this architect and urban theorist brought the basics of the orthogonal grid to two main sites during his lifetime, namely the Piraeus and the colony of Thurii. Both played a significant part in the history of Athenian imperialism during the fifth century. The increasing importance of Athens' harbors at this time justified sweeping reform, which was done according to Hippodamian principles: the city's three harbors developed an urban plan that was distinct from Athens, composed of four broad avenues and two main parallel streets that intersected and formed a consistent grid (Blackman 196). Three zones divided the port-city into religious, residential, and commercial centers. Lastly, the agora of the *demotai* (citizens' market), which is most closely associated with that of Hippodamus, was also created. At Thurii, on the other hand, the ideals of Pan-Hellenism gave credence to Athens' imperialist stance as the rising hegemon of Greek society. The city also provided Hippodamus with a unique

opportunity to synthesize the theoretical with the practical side of city planning. Although it was by no means a utopia in either the modern or the ancient sense of the term, the Greeks did not discontinue their inquiry into the nature of the ideal *polis*.

Despite Hippodamus' influence at these two cities, he was, nonetheless, merely the personified form of a transformative phenomenon in the field of city planning. His ideas concerning the orthogonal grid were not born out of a vacuum, but rather they served to codify a preexisting phenomenon. The large, bureaucratic states of the Near East set the precedent for the grid plan, particularly at such sites as Tell el-Amarna, the *necropolis* at Giza, Babylon, and the *temenos* at Ur. In the immediate centuries before Hippodamus, the Archaic Greek world also witnessed sweeping changes beginning to take place, largely in the colonies at Magna Graecia. Even after Hippodamus' proposed lifetime, or in regions that lay outside of his immediate reach, his influence continued. In the Classical period, areas such as the Chalcidice utilized a grid plan in a manner that was most likely done without the guidance of Hippodamus. His ideals of social cohesion and land equality were present, nonetheless. At Olynthus, the residential buildings are among the best preserved examples of any Greek city from the time, and they provide a window into not only the social life of its citizens, but also the level of uniformity that characterized a Hippodamian-style plan. As Hoepfner and Schwander affirm, "all the houses were essentially identical in plan – the architectural uniformity of houses being a manifestation of the Greek ideals of *isonomia*, imposed from above by the government of the polis" (82). This *isonomia*, or the state of having equal political rights, was a significant component of the grid design, which it helped to reinforce. Much as Hippodamus served to cement the link between political philosophy and urban planning, so too did the orthogonal grid work to strengthen a society's values and attempt to bring rational order to individual lives.

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Appendix of Images

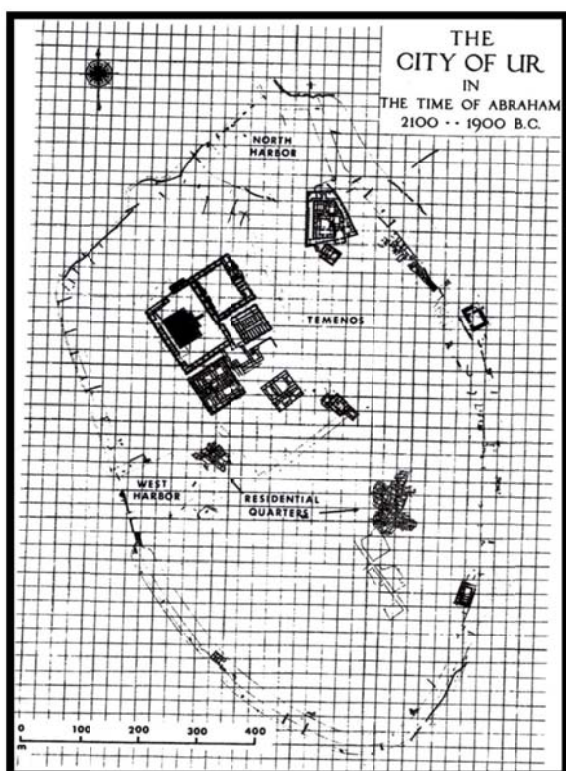


Figure 1: General Plan of Ur (Lamp)

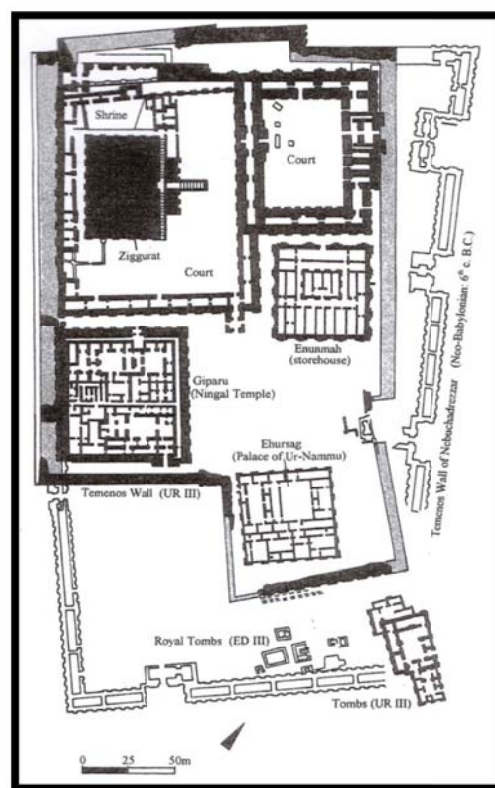


Figure 2: Ur Temenos Plan (Lamp)

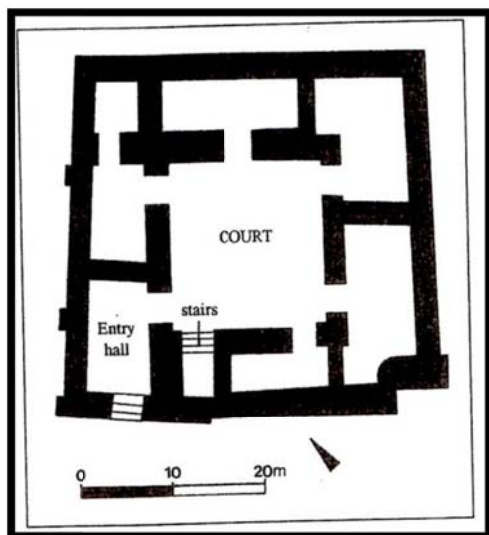


Figure 3: General House Plan at Ur (Gates)



Figure 4: General Plan of Babylon (Lamp)

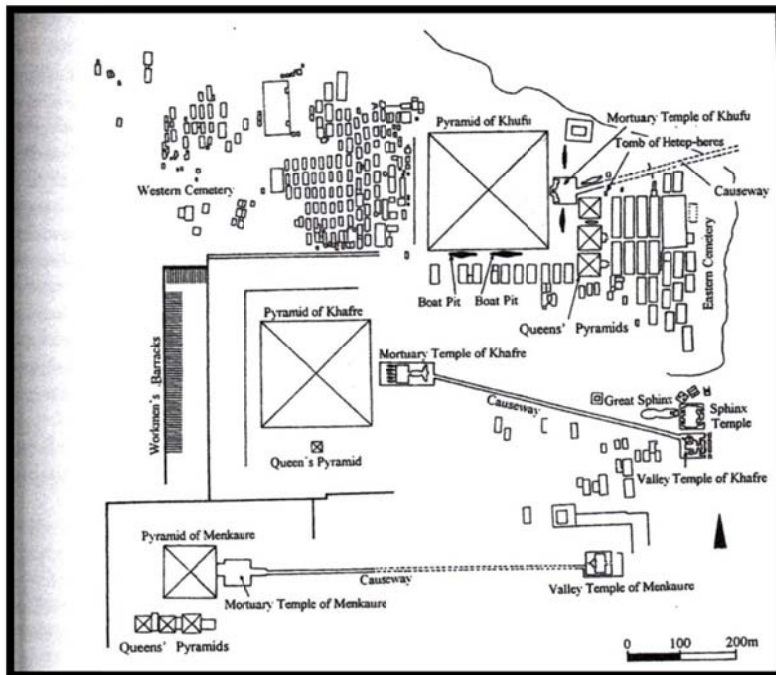


Figure 5: General Plan of Giza Necropolis (Gates)

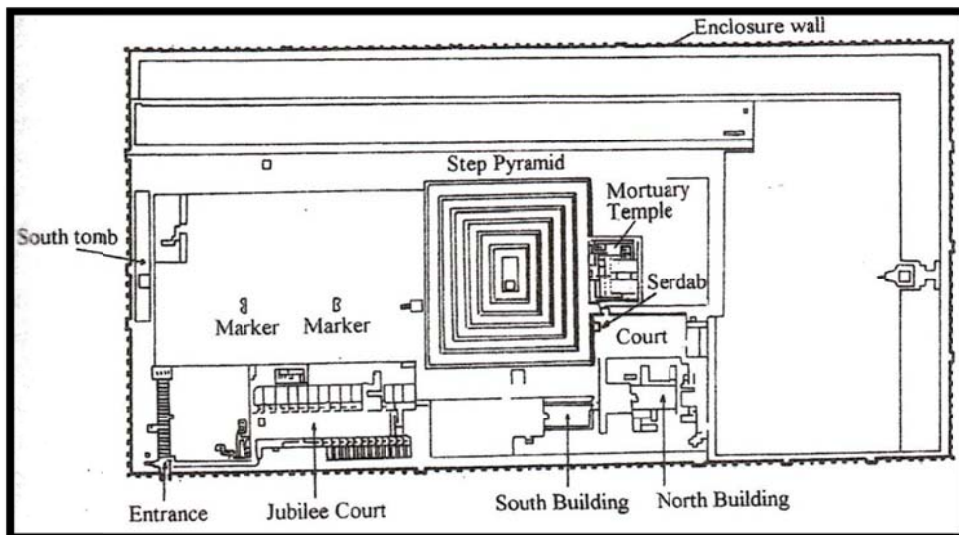


Figure 6: General Plan of Saqqara (Gates)

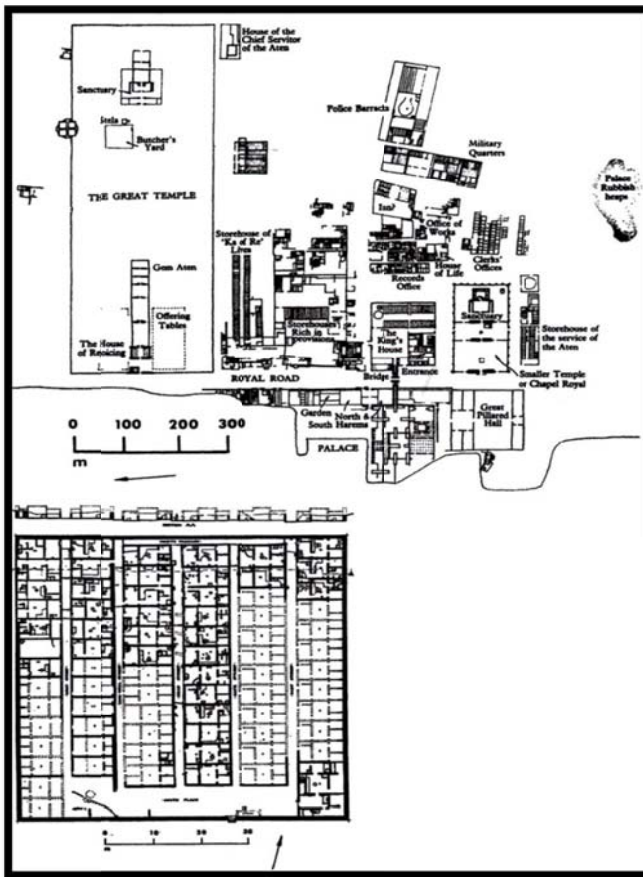


Figure 7: (a) General Plan of Tell el-Amarna (b) Workmen's village (Lamp)

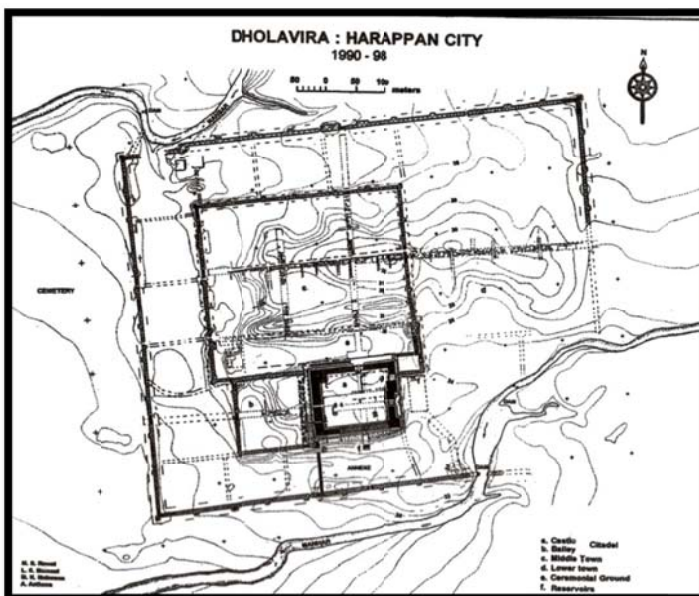


Figure 8: General Plan of Dholavira (Malville)

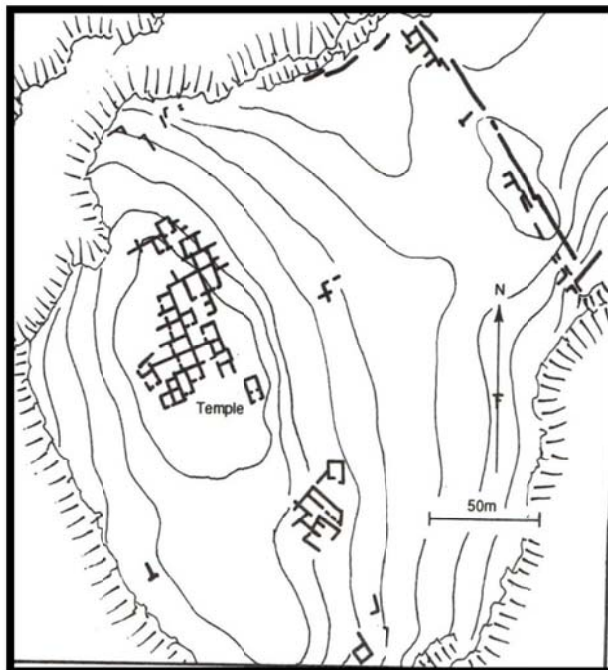


Figure 9: Plan of Zagora, Andros (Owens)

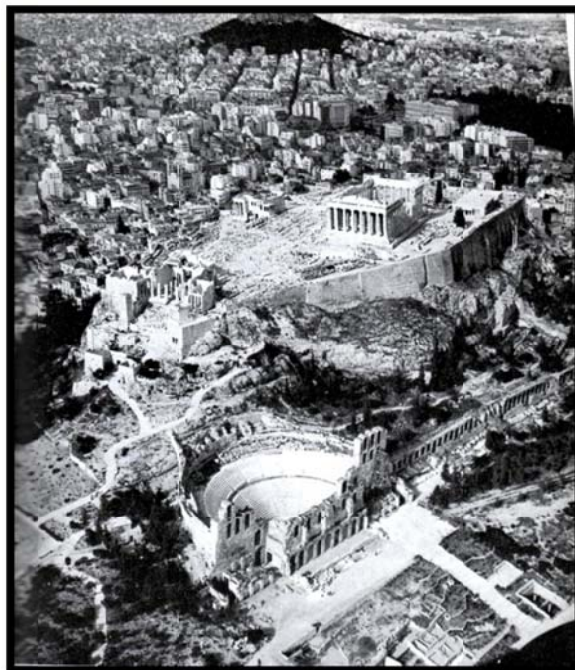


Figure 10: View of the Acropolis from SW (Morris)

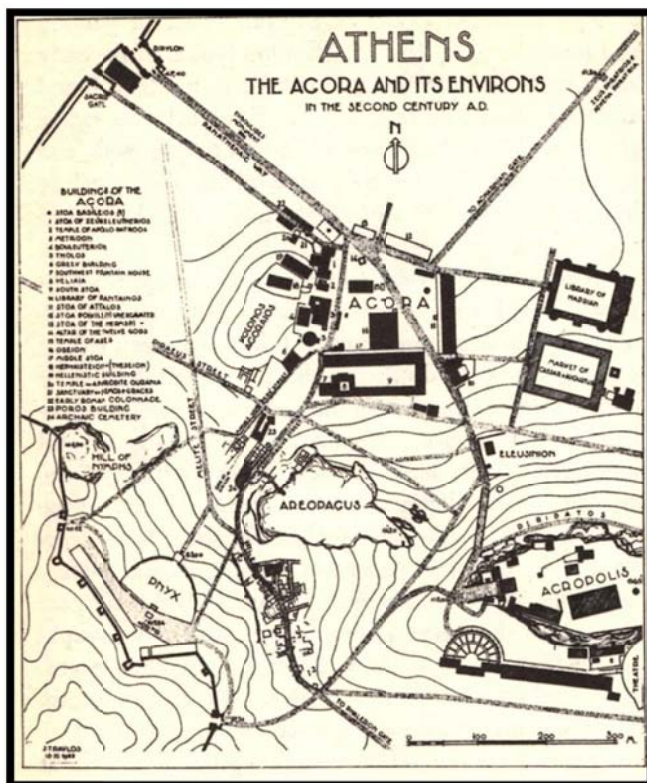


Figure 11: Plan of the Athenian Agora (Wycheley)

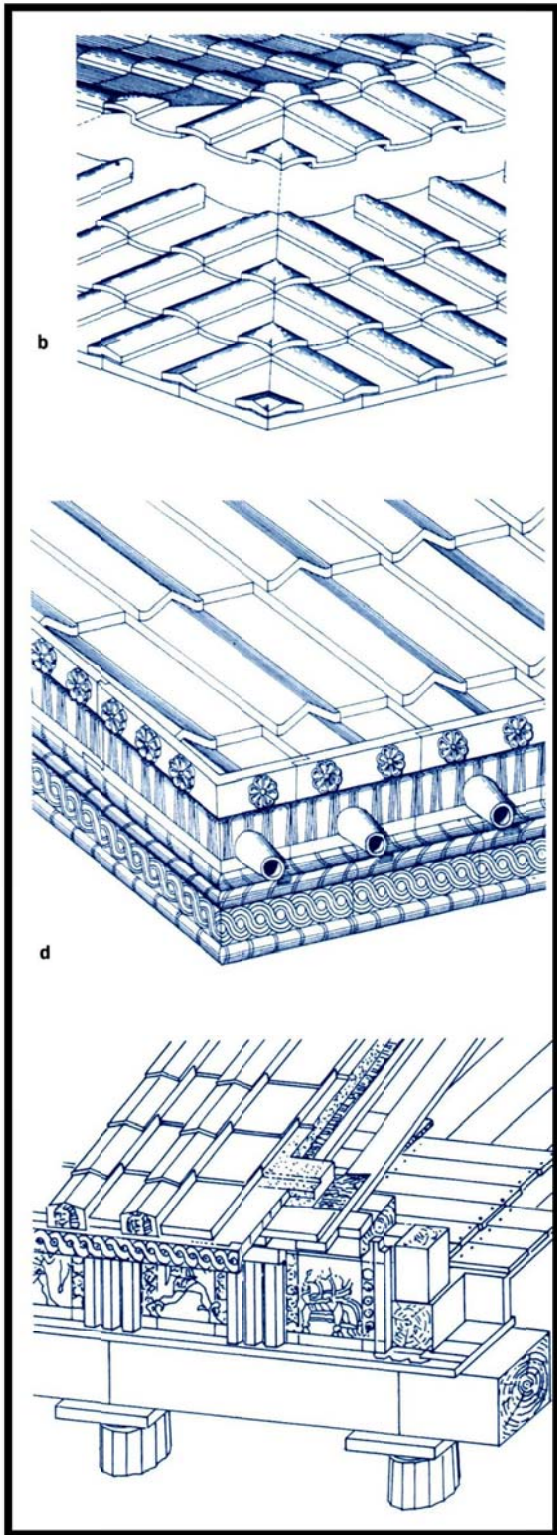


Figure 12: Roof Tiling System (Neer)

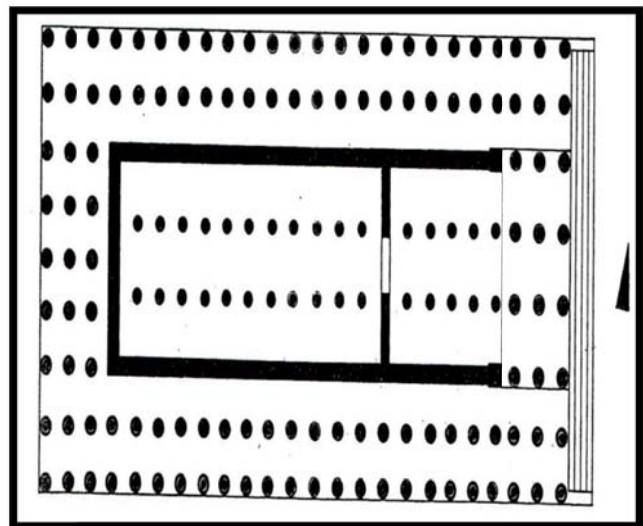


Figure 13: Plan of the *Heraion* (Gates)

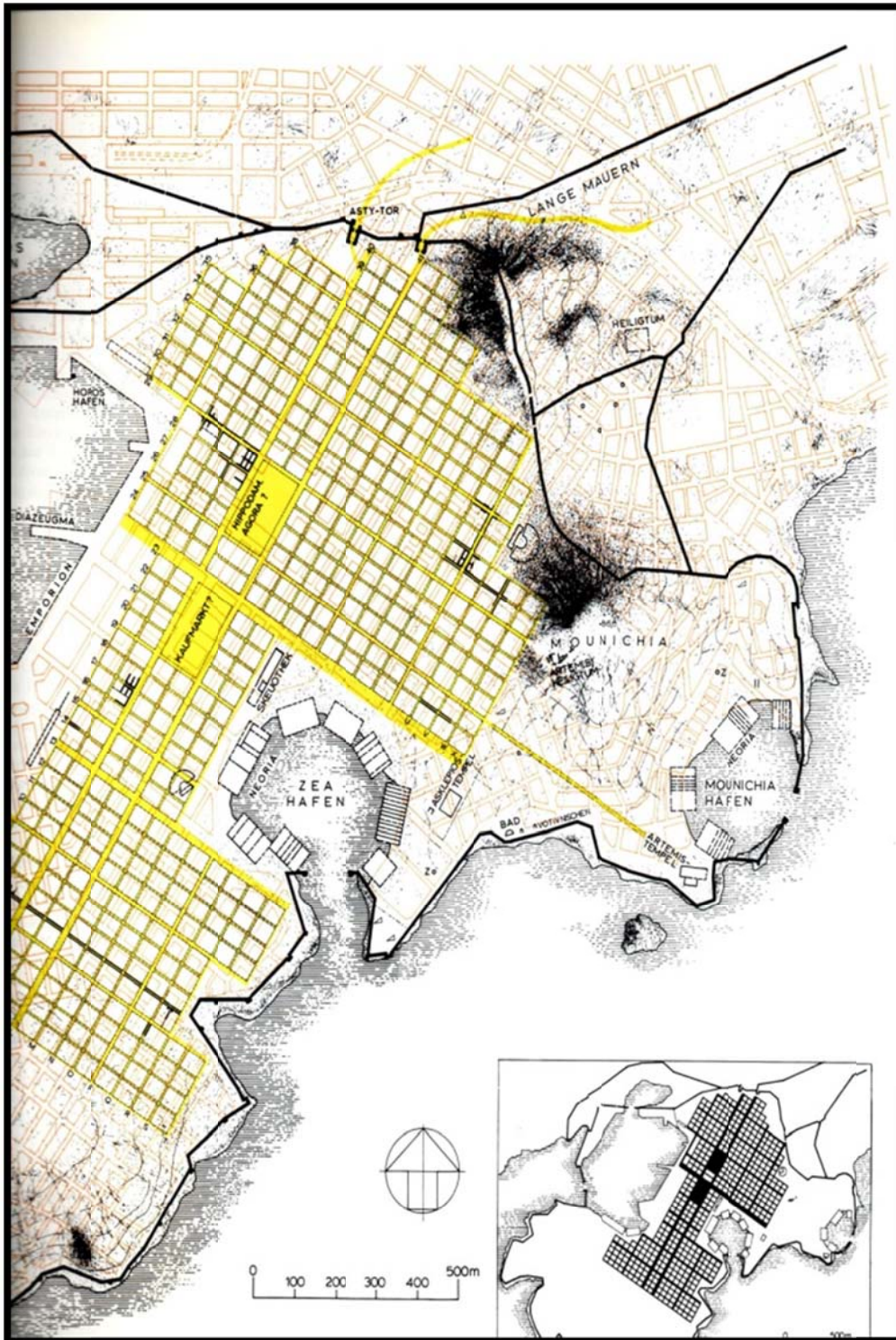


Figure 14: Plan of the Piraeus, possible site of the Hippodamian Agora left of center (Hoepfner)



Figure 15: Reconstruction of an *insula* at the Piraeus (Hoepfner)

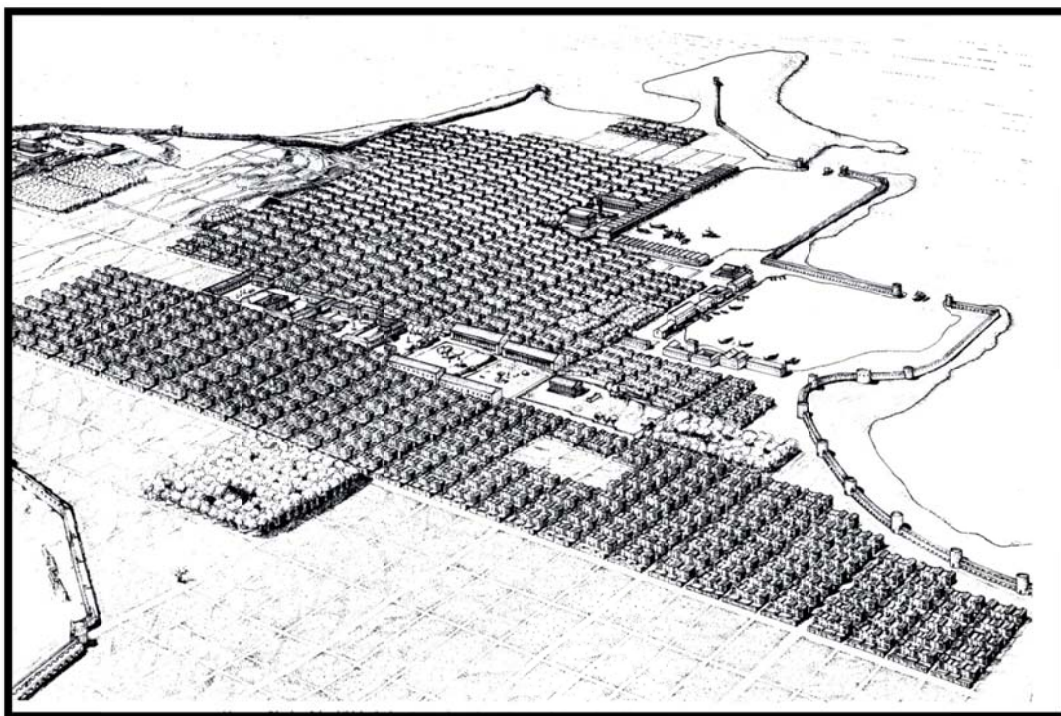


Figure 16: Illustration of Rhodes in 408 BCE (Hoepfner)

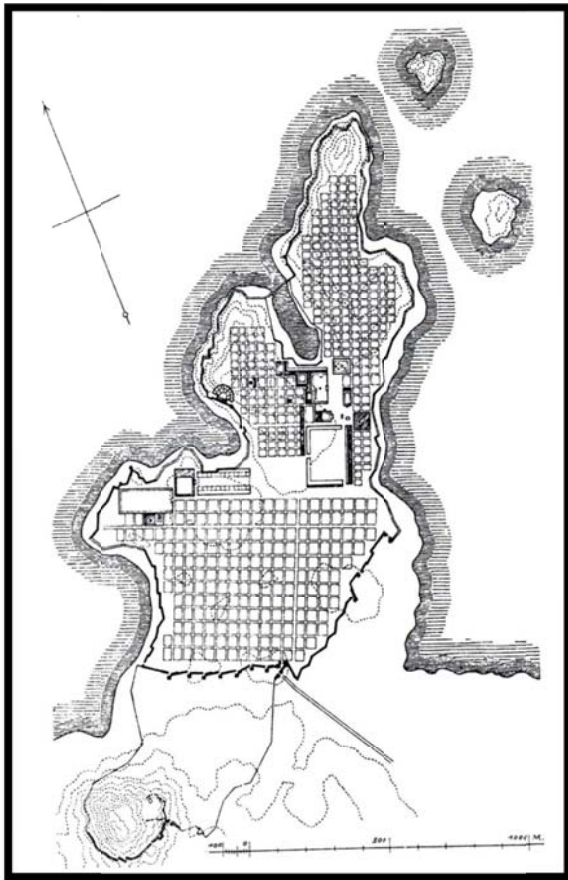


Figure 17: Plan of Miletus (Castagnoli)

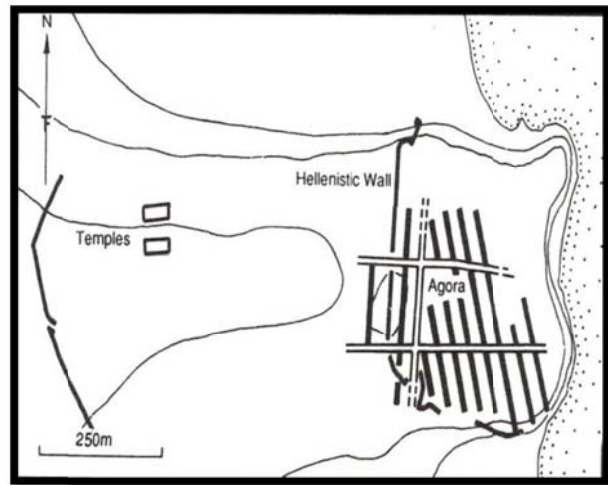


Figure 18: Megara Hyblaea (Owens)

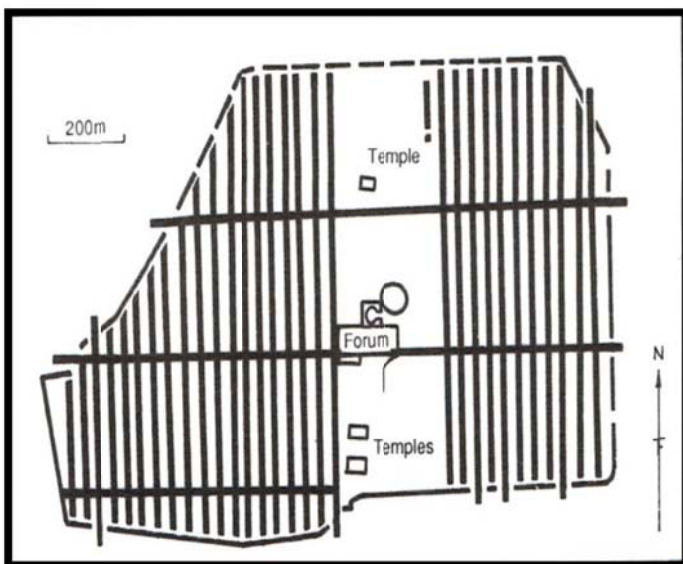


Figure 19: Poseidonia (Owens)

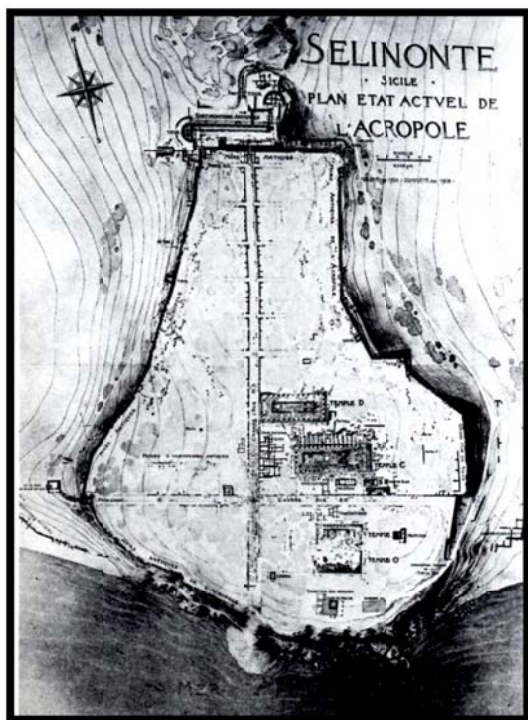


Figure 20: Selinus (Castagnoli)

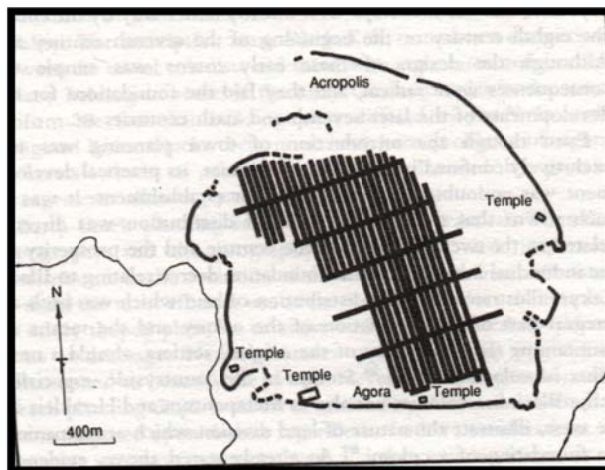


Figure 21: Akragas (Owens)

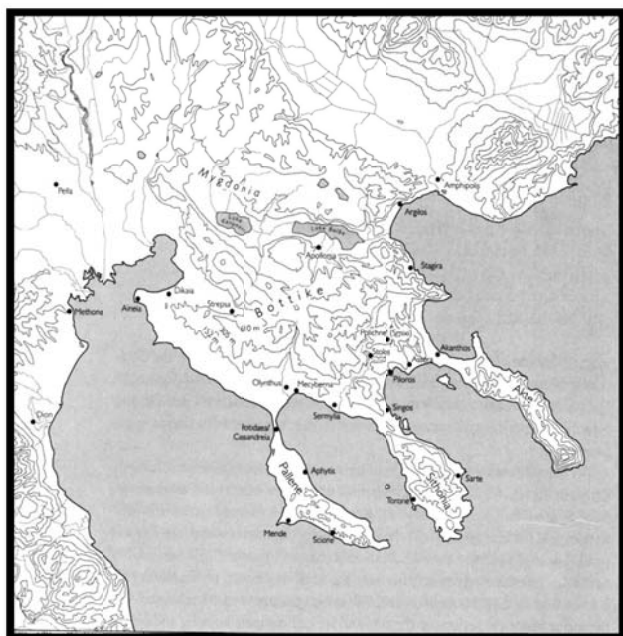


Figure 22: Map of the Chalcidice (Cahill)

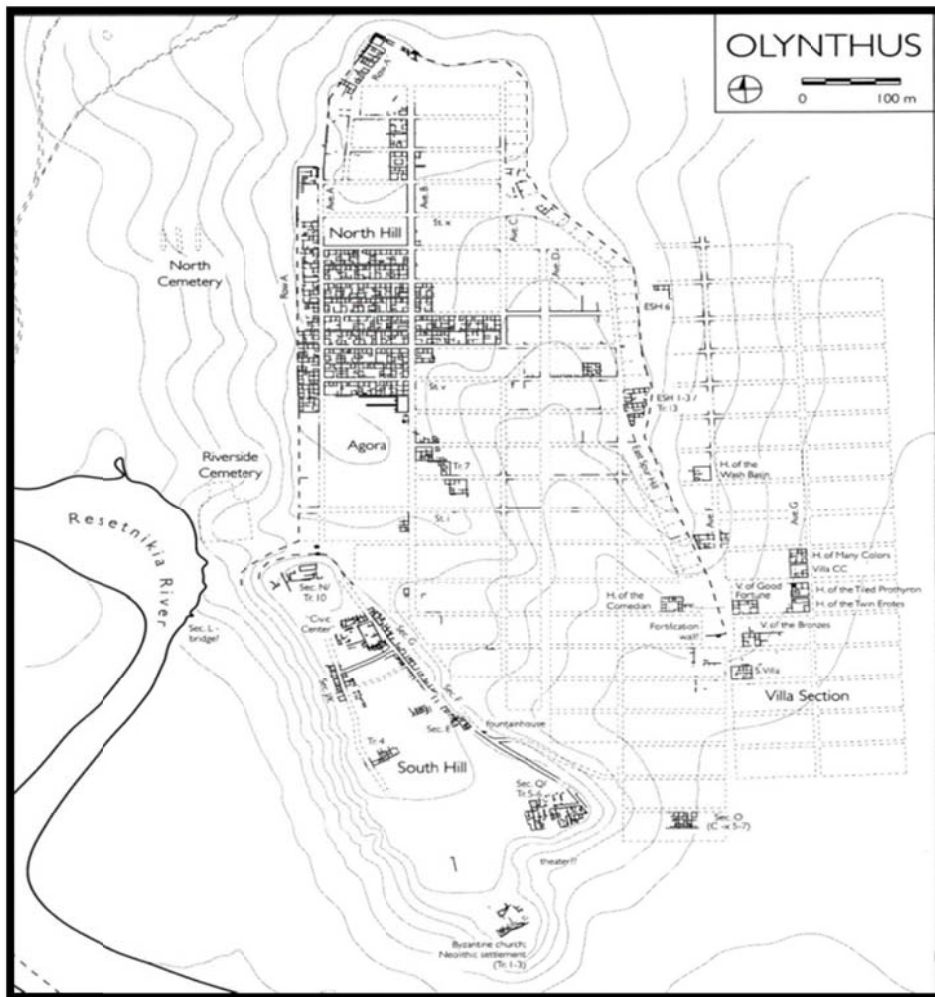


Figure 23: Overview of Olynthus (Cahill)

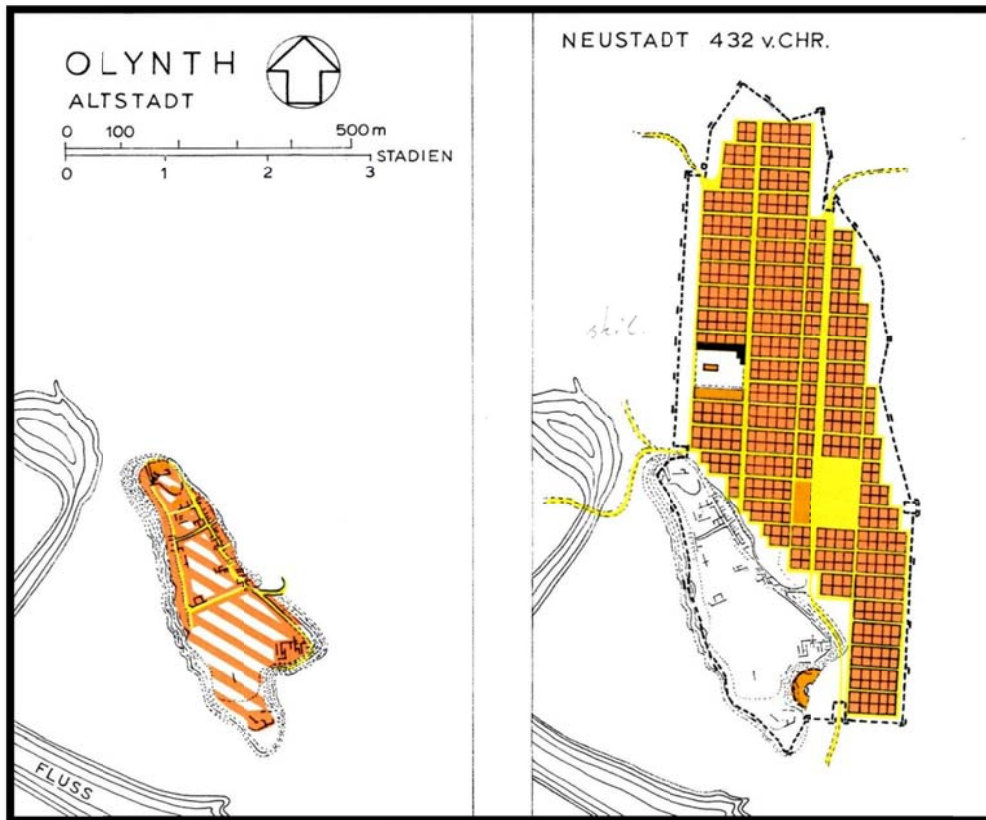


Figure 24: Expansion of the city of Olynthus in 432 BCE (Hoepfner)

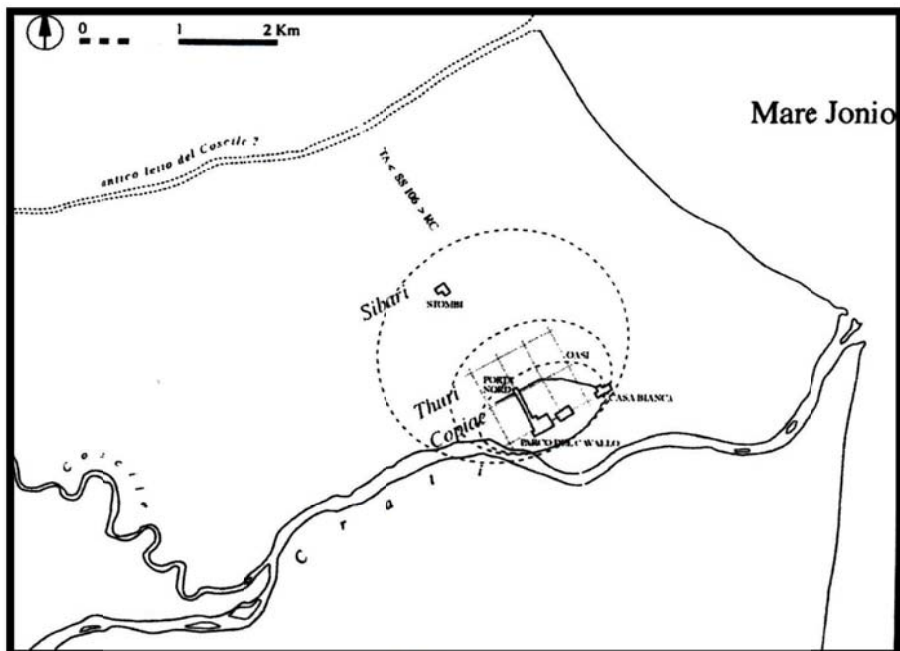


Figure 25: Location of Thurii in relation to Sybaris and Copia (Greco)

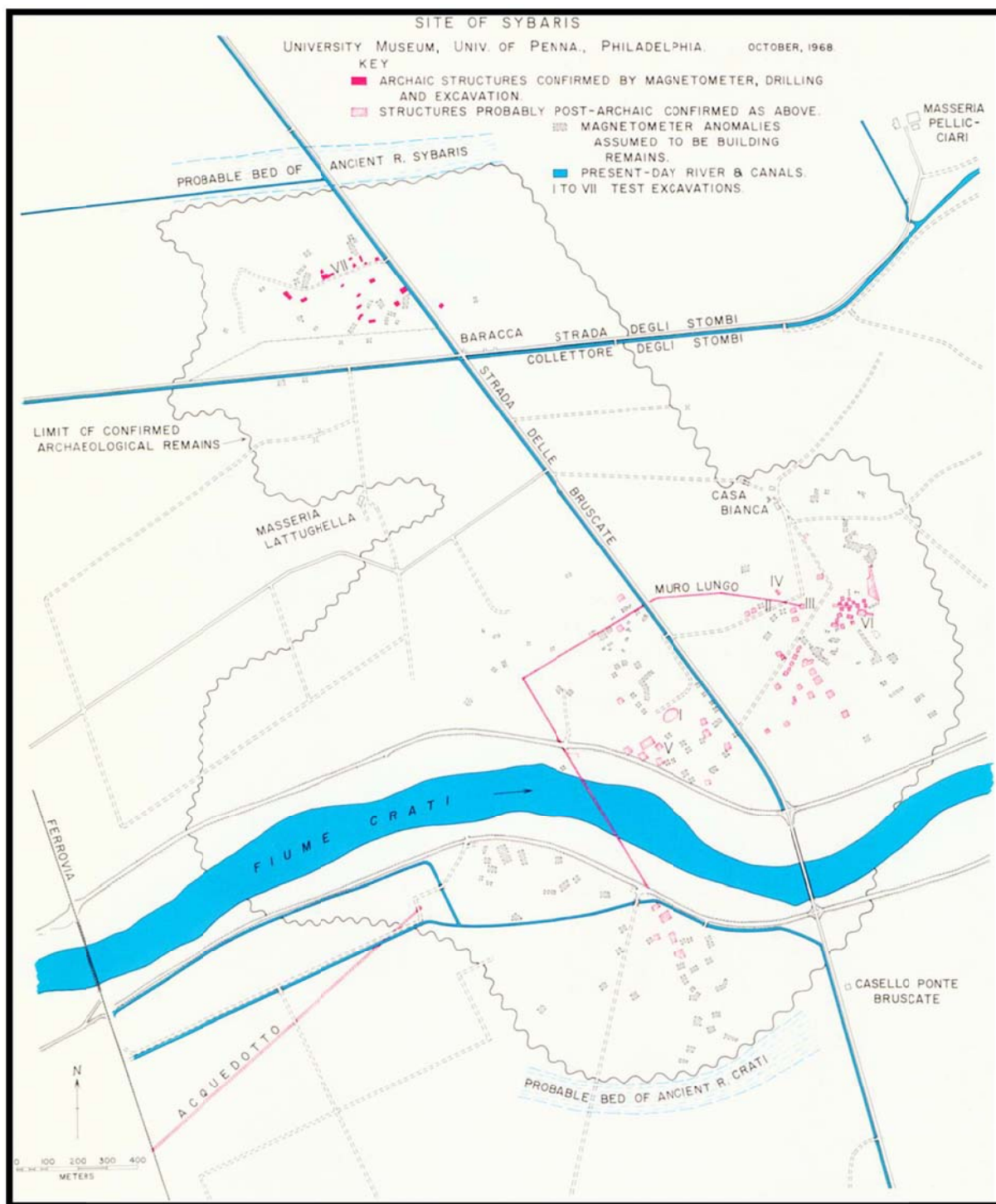


Figure 26: Extent of archaeological remains along the Crati River (Rainey)

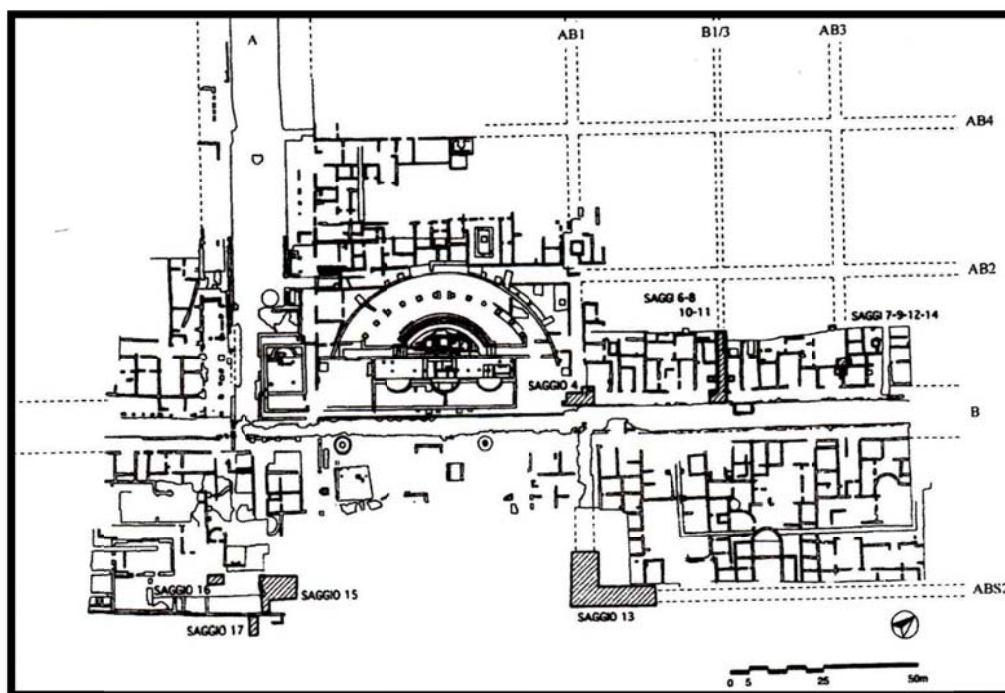
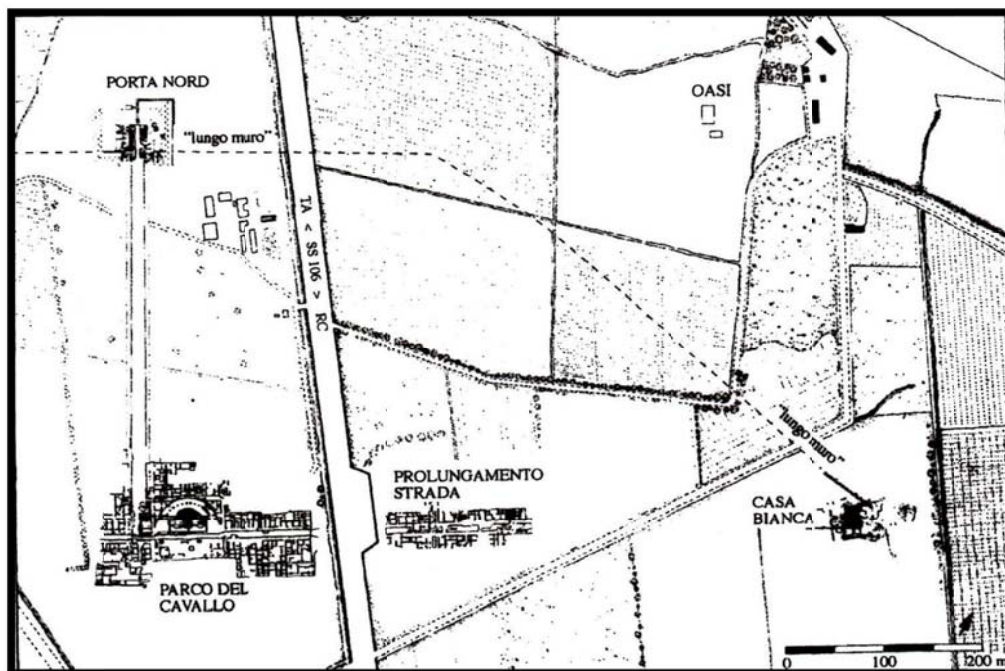


Figure 27: Excavations at Porta Nord (a) and Parco del Cavallo (b) (Greco)

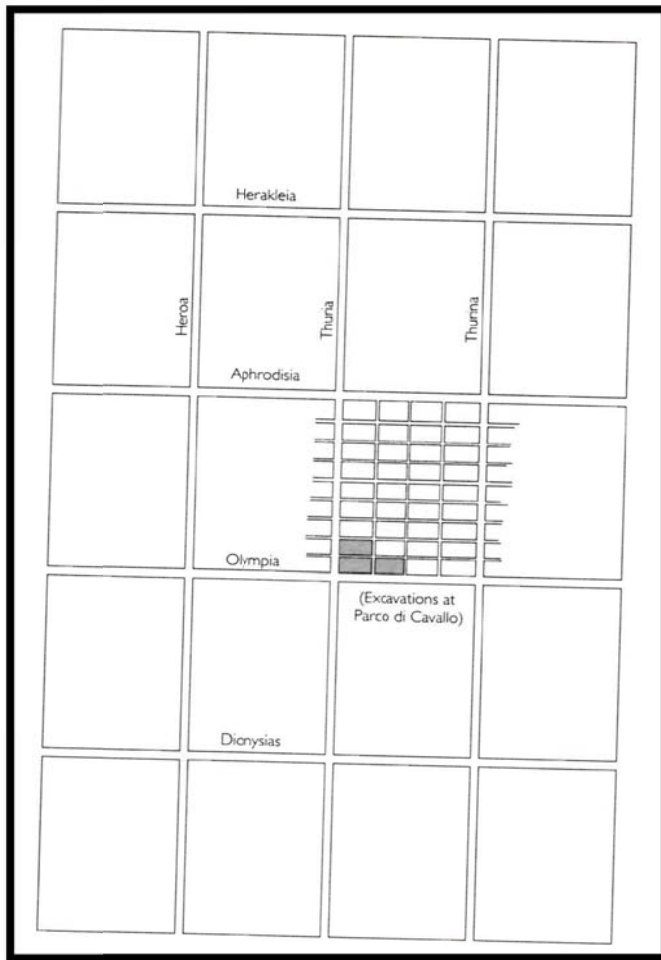


Figure 28: Proposed plan of the streets at Thurii (Cahill)