1 Urban Morphology and the Shaping of an Urban Ideal

CITIES ARE the greatest of human inventions. They embody our histories and manifest our technological innovations, cultural and social interactions, economic structures, political systems, and our respect for (or fear of) deities. Cities contain our imagined communities, our socially constructed identities, and the spaces that shape our daily activities. We equate cities with progress, and in many cases cities elevate their citizens to higher social status than that afforded to their rural counterparts. As representations of who we are (and who we were), cities have been the objects of our desire, our love, and our hate. With mixed emotions we have come to imagine them as sites of comfort and safety as well as of poverty and misery, filled with vice and immorality and godlessness. Cities are the nexus of production and consumption, service provision and neglect. These dichotomies have been with us since ancient times. Judeo-Christian texts assailed the magnificent cities of Mesopotamia as places unfit for "true believers." According to these texts, God accepted the farmer's gift, burned Babylon, and ran Lot and his family out of Sodom and Gomorra. But if God frowned upon the corruption of cities, their denizens loved them, nourished them, and handed them down to us—their urban descendents—as gifts. Not unlike them, we seek in cities what cannot be attained in the country—anonymity, economic mobility, social ascendance, money-ordered civil society, and the ability to produce and consume at the highest level possible. It is in cities that civilizations have been born and it is in cities that the concept of the citizen was born.

We seek evidence of culture, social organization, economy, and politics in the physical structure of cities. Documenting history primarily from an aesthetic perspective, cities are our most persistent spatial narratives. They predate nation-states and in all likelihood will outlast them. Despite the obsession of architectural historians and historical texts whose purpose is to further an exaggerated sense of nationalism, cities are as much about the everyday life of their residents as they are

about monuments. Though the life, contribution, and spatialized existence of elites may be the mainstay of most urban histories, we agree with James Vance (1990) that the least studied spaces of the city belong to vernacular architecture. For cities to be understood in their totality, urban form cannot be limited to social, political, and economic processes but must include the physical structure that defines its spatial connectivity and hierarchy. Why urban forms persist despite revolutions but change in response to specific technological innovations is at the heart of how cities survive the upheavals that occasionally rattle the sociopolitical organizations that they house. Cities are not simple pawns in an economic and political game of chess. Spatial forms and their morphogenesis cannot be understood through political economy alone; our understanding also must be informed by everyday existence, alienation, resistance, and resilience. After all, cities of people clearly have outlived the cities of gods, god-kings, and demigods. Though certain elements of the urban form may have been created through the direct intervention of political and economic elites, it is the city of people that defines the urban experience.

In this chapter we review concepts in urban morphology from historical, social, political, economic, and planning perspectives. First, we trace urban morphological patterns in various regions of the world. Our intention is to help readers derive a regional, or at least a temporal, understanding of distinct urban typologies. We discuss briefly the various phases and types of urban forms, including early cities, Greek, Roman, Muslim, medieval, Renaissance, industrial, and postindustrial cities. We then discuss the role of modernity in altering the shape of cities. And, finally, we review some of the current debates on urban design and alternative ways of conceptualizing the physical structure of cities.

INVENTING CITIES

Most urban histories begin with a discussion of the Agricultural Revolution and its impact on the birth of cities. This history is then tied geographically to Mesopotamia. The eminent cultural geographer Carl Sauer (1952), however, argued that the practice of agriculture might have occurred first among sedentary populations in Southeast Asia—not in Mesopotamia—fourteen to thirty-five thousand years ago. This theory, which has been supported by archeological investigations, is based on the deduction that vegetative reproduction (agriculture that

does not rely on seeds but employs roots and plant branches to grow and reproduce plants) may have preceded the more sophisticated agricultural practices found in Mesopotamia. Conflict over resources, management of irrigation systems, development of labor specialization, and the need for administrative functions that were beyond the capacity of individual farmers were also responsible for the emergence of what we recognize today as urbanization. It is no surprise that the godlike heads of the early city-states rarely took the image of an ascended farmer but rather assumed the figurative power of a hunter. What is important for us to realize is that the history of urbanization is not a simple transformation of hamlets to cities, based entirely on the addition of more people. The birth of cities is connected with innovations in agriculture and also, more significantly, in governance and the management of highly concentrated populations.

As many others have done, we identify five urban hearths in the world, from which urbanization diffused. These are in Mesopotamia (in the flood plains of the Euphrates and the Tigris), Pakistan (along the Indus River valley), China (in the valleys and alluvial fans of the Huang River), Egypt (along the narrow flood zone of the Nile), and Mesoamerica (including, according to some scholars, Andean cultural centers). Proximity to fertile soils, delivered annually by river floods, made these places ideal for the birth of cities. Morphologically, then, it should come as no surprise that, along with the dependable agricultural production in close proximity to these sites, the earliest cities would dedicate special areas to the storage and management of food. A city devoted to agriculture would also build and maintain irrigation systems, make rules for the distribution of goods and water rights, erect walls to defend the stored food (and those who protected the food—the ruling class), and invent deities concerned with agricultural productivity. The code of Hammurabi is a testament to these innovations and to the system that protected and maintained the cities. The emerging urban cultures, with their dependence on agricultural productivity, would seek in king and gods the protection of their common well-being.

Before the God of Abraham attracted a large following, fertility gods were venerated in city and country alike. In cities they were monumentalized in impressive temples and walled buildings. Echoing these so-called pagan gods' role as the common deities of farmers and city dwellers, the Semitic religions pointed to Cain, the son of Adam and the original farmer (who killed his brother Abel, the herder) as the founder of the city of Enoch, after the name of his son. Interestingly, the Semitic

religions adopted a lunar calendar that closely corresponded to the life-style of farmers.

Agricultural order was invented in cities and imposed by their rulers on farmers. Villages did not turn into cities; they gave birth to physical and social systems that came to rule, regulate, and subjugate them. The city-states of Mesopotamia were made possible by the order wrought on agriculture by urban governments and were ruled by godlike kings whose interest in sustaining their power enticed them to build defensive structures and protect both cities and the agricultural networks that fed them. But how did city-states appear, and why? What were the first cities like? And what do we know about their morphology?

Maisels (1990) offered a model of urban development (i.e., city-states) that may start us on a path to answering these questions. Building on the hydraulic civilization model, which argues that a sophisticated irrigation-based agriculture was a prerequisite for the formation of city-states, Maisels suggested that conflict and redistribution may be used as factors for understanding how cities were spun into existence. He used Wright's (1978) extension of Carneiro's (1970) external conflict theory to illustrate the process by which states could have originated. In this model, population growth and circumscribed agricultural resources contribute to warfare, which leads to the formation of military organization, on the one hand, and the eventual societal hierarchy and domination patterns, on the other. From the latter, it is assumed that tribute flows demanded administrative functions, which, along with military needs, led to the eventual formation of a centralized government. According to this external conflict model, then, the city-state arose from conflict over limited agricultural resources. Here the connection between cities and the natural resources needed by a growing population is implicit.

Maisels, using Diakonnoff's (1969) internal conflict model, illustrates how internal dynamics within the growing villages of hydromorphic zones could have accelerated and refined the formation of the city-state. In Maisel's model, three factors are essential for understanding the sociopolitical evolution of cities: increasingly differentiated crafts (i.e., labor specialization), the need for more slaves (i.e., cheaper or free labor), and increased irrigation. These three factors are assumed to have generated increased wealth that led to further differentiation of the poor and the rich. A primitive form of preindustrial capitalism appears to be implied here. Given the increased level of warfare over agriculture and the growing class conflicts, this model suggests that, to a large degree,

the birth of city-states was a function of various internal conflicts. However, even a city-state spawned by internal conflicts would focus on irrigation (among the three input factors in this model) as a way to assure productivity and control of civil matters. Nature is once again implicitly identified as a major raison d'être of city-states, but so are sociopolitical issues, especially managing (or eliminating) internal conflicts, albeit in favor of the elites.

Wittfogel (1957) offered a less conflict driven and more managerial model of city-state development. This concept has been used more regularly in various disciplines and forms the basis of many texts on urban history. His model began with large-scale irrigation, assuming that such an agricultural system would necessitate water scheduling, construction planning, labor coordination, and stable productivity. The first factor would lead to the formation of specially structured calendars; the remaining factors would lead to increased wealth. Both outcomes, along with the need to defend irrigation networks, as well as planning and labor-coordination services, would give birth to differentiated and professionalized leadership in city-states. It should be noted, however, that implicit in this model is a structure of class differentiation that leads to various forms of internal conflict as well as to inherent conflicts over natural resources. It would be useful, therefore, to entertain the idea that, while city-states were born from agricultural innovation, conflict over the use of natural resources, which, along with the further separation of social classes (through differential levels of accumulation), were partially responsible for many external and internal conflicts, have accompanied the history of urbanization. Mumford (1961), in fact, connected the rise of cities to the institution of kingship, which became pivotal in establishing authority and organizing the war machine.

These deductive/inductive theoretical models are driven largely by archeological evidence, which, in addition to texts/tablets, includes urban forms as evidence about how ancient societies organized themselves. The morphological pattern of the early Mesopotamian cities provides some of the most intriguing clues about how the first city-states operated and how their design may be connected to their social, economic, and cultural dynamics.

With little variation, the cities in Mesopotamia (as well as in the Indus Valley) had five morphological components: an encompassing wall, a citadel, one or more temples, a granary or food storage, and various residential neighborhoods. The market area was in some cases inside the city but was often relegated to temporary spaces outside the

wall. The city, as a place of commerce, had yet to cultivate the full development of market functions. As Mumford (1961) argues, the city belonged to the warrior kings, who, with the help of the temples, assumed control of the city. The five morphological elements symbolize the urban functions of kingship, religion, defense, and urban management. But what was defended or protected? Herodotus's account of how the city of Ecabatan (or Hagmatana) was built by the Medes may provide an answer. He suggests that after being elevated from the status of a just and wise man to kingship, Deioces (seventh century B.C.), the first king of Medes, had a palace built for him that was protected by walls. Medes built strong circular walls, one inside another, to protect not themselves but their ruling elites. This pattern is also visible in the case of Khafajah (from the early dynastic period). In this city, the enclosure of temples and palaces within their own walls suggests that cities may have been built to provide protection, but they protected the ruling and religious elites more than any other group. Thus we should not equate the early cities with the "city of people," which appeared many centuries later. In fact, the morphology of earlier cities needs to be studied separately from those of Greeks and Persians, who inherited more than five millennia of urban experience by the time they built their cities.

The majority of the early cities were small in size and housed very few people. For example, during the Uruk period, the north Syrian town of Habuba Kabira, which is located along the Euphrates, had an enclosed area of eighteen hectares, or about forty-four acres (Crawford 2004). There were only two gates, and the city seems to have had a dominant acropolis that included some residential and production areas (i.e., cottage industry). In Ur the acropolis had its own walls owing to the size that the city had achieved (100 hectares, or about 250 acres) by the time of the third Ur dynasty. While the first layer of walls defined the boundary of the city, it was the stronger inner walls that separated the elites from the others. These walls defended against both internal and external conflicts but, more important, they distinguished "inside" and "outside." Ironically, despite its larger size and clear representation of the five morphological components listed above, public space and major markets were barely accommodated in Ur. As in smaller cities, it appears that these functions occurred closer to the gates and at times extended beyond them to areas outside the wall, but along the road leading to the gate. This pattern remained common in many Middle Eastern cities until the twentieth century (Modarres 2005).

Despite the exclusion of the market, or the inability to give a large space for its public functions, by the third millennium B.C. expanded public works, especially the building of stronger walls and paved streets, became a major feature of cities (Crawford 2004). Water and food storage areas, however, remained within the inner walled area of the city (as in Nippur), and the residential areas, which were located between the inner and the outer walls, were segregated by social and professional status. Many cities today display similar spatial patterns of wealth. However, what distinguishes the geography of class in ancient cities from that in modern ones is that there is little evidence that a land value structure was used as a mechanism for segregation. In fact, the selling and buying of land or houses does not appear to have been a common practice. Families were assigned land by their social status, and the size of the assigned plot was a function of position within the social hierarchy. Many of the permanent labor classes exchanged their labor for subsistence provisions that included being housed by their employers (or owners, in the case of slaves) (Pollock 1999).

Morphologically, not all Mesopotamian cities were alike. For example, the city of Eridu was built with more stone (as opposed to mud bricks) than other cities of its time, was located away from the Euphrates (but closer to where the waters of the Persian Gulf once reached), and had little resident population by the first millennium B.C. One of the oldest cities in Mesopotamia, Eridu was also built around temples. Its origin was associated with religion and its demise in 600 B.C. was caused by environmental factors (namely, the accumulation of silt and the increased salinization of agricultural land in the southern regions of Mesopotamia) and political shifts to the north. By the time Hammurabi ruled Babylon, the Sumerian world moved at a slower pace, and the rise of the Assyrians meant that a complete shift of power to the north had been accomplished.

In both Babylon and Nineveh, urban structures were fully formalized. This included not only the presence of walls, temples, and palaces, but also, as Pollock (1999) has argued, inequalities and sociospatial differentiation. Urban structures included monumental architecture, dedicated to gods and god-kings, and (at least by the time of the Assyrians) a system of interurban connectivity. The emerging hegemony of power in Mesopotamia, a millennium before the arrival of the Persian Empire to the east and the Greek to the north, meant that Assyrians would successfully capture the long-isolated Egyptian cities. Pharaohs, who had enjoyed the natural protections of deserts and the long distances

between them and other powerful empires, built their cities without walls. In fact, Egyptian cities were mostly cities of the elite. As Mumford argued, unlike Mesopotamian cities, which grew organically, Egyptian cities were in many cases a one-stage operation. A geometric plan on a largely flat piece of land was followed, which allowed for a quick construction. In more exaggerated form, Egyptian cities followed Mesopotamian cities in their dedication to gods and god-kings. In both geographies, the separation of rulers from the religious authorities was unnecessary and unwarranted.

While planned (i.e., orthogonal) cities were a rarity in Mesopotamia, by the time of the third dynasty of Ur, at least, we find major streets to which many residential alleyways led. The main roads were typically wide and in many cases paved. The walls, symbols of power in Mesopotamian cities, could attain a substantial size, though they were not completely impervious to invading armies (even in the case of Uruk, in earlier periods, the wall was several meters thick and at least seven meters tall).

The absence of geometric or orthogonal cities in Mesopotamia does not necessarily mean that the Greeks invented this concept. In fact, as suggested earlier, Egyptians employed strict geometry for their cities, as did the Chinese. The first urban grid pattern, however, may have been employed in the city of Mohenjo Daro in the Indus Valley (from the third to the second millennium B.C.). This was one of the major cities of the Harrapan civilization and exemplifies an ancient planned city. Not unlike Mesopotamian cities, however, it was divided into two parts. The high city, or citadel, which housed the elites and granary and provided better urban amenities, was located next to the lower city, housing a population of up to thirty-five thousand. The lower city was planned in a grid pattern, with specific attention to water drainage. Though the Harrapan culture and its associated network of cities collapsed before the end of the second millennium B.C., it is important to note that these cities were not completely isolated and were known to Mesopotamians and others who may have established trade with them.

GREEK CITIES AND URBAN DESIGN

To the Western world, and especially to urban historians, Greece is viewed as the source of two major urban inspirations—the rise of a "city of people" and some basic urban planning principles. While neither was invented by the Greeks out of thin air, the Greeks were perhaps the

origin of various documented urban concepts that were inherited by Etruscans, Romans, and, later, Europeans. The idea of the city as a place of freedom and social growth was strong among the intellectual elites of Greece. For example, while Plato was cognizant of the inherent conflict within and between cities, for Aristotle the city was a place where people came to live, and where they remained in order to live better. It is interesting that as cities of people rather than as places dedicated to god-kings alone, Greek cities required an imposed order that, despite its expressed language of dedication to divinities, was invented by people.

We look to Hippodamus as the father of Greek urban planning, but before we begin a discussion of the cities he designed and his influence on the Etruscans and Romans, we need to look at Greece before the Persian attack that led to the destruction and reconstruction of Miletus. About the same time that Deioces had the Medes build him the city of Ecbatana (as Herdotous tells us), what is known as ancient Greek civilization emerged. Derived from three earlier civilizations—the Minoan, the Cycladic, and the Hillidic (which flourished along the Aegean Sea beginning in the third millennium B.C.)—Greek civilization, as we know it today, appeared by the eighth century B.C. By the sixth century B.C. Pythagorean geometry and its search for a relationship between spatial and musical proportions had led to various exercises in architectural aesthetics and, by extension, the urban form.

But fully realized rational planning did not begin until the building of Miletus. In Athens, for example, we cannot detect a formal plan until the fifth century B.C. However, as Bacon (1974) illustrated, the Panathenaic Way, which functioned as a local and interregional thoroughfare, acted as a spine around which various morphological components of Athens were located. Athens's agora (marketplace) and acropolis were connected by its pathway. Here, the street became both a sacred way, connecting various temples, and a commercial and public route. During the various stages of its development, Athens grew organically around this major thoroughfare, and its agora evolved with the gradual growth of the city itself. What made the urban structure of Athens interesting was its use of the shaft of space created by the Panathenaic Way. Even by the second century A.D., Athens's agora was fully adapted to this street.

What we recognize as Greek city planning comes from the rebuilding of Miletus after it was destroyed by the invading Persian army. In reconstructing the city, Hippodamus formalized the Greek urban morphological components (i.e., agora, acropolis, and gymnasium). (Theatre was

added later—in the case of Miletus, during the Hellenistic period, in the middle of the second century B.C.) Hippodamus also introduced the concept of orthogonal (or gridiron) planning through repetitive modules of rectangular blocks. His geometric layout remained in use (and in fact the blocks were gradually filled) until Roman times. Miletus thus accommodated a historical progression of change within its preconceived geometry from the fourth century B.C. to the second century A.D.

Miletus is important not only as the place where the gridiron plan was first implemented on a citywide scale but also for the promotion of the Hippodamian plan. The city of Delos, located on the island of Deloa in the Aegean Sea, also followed an orderly plan. Different parts of the city, though separated by topographic features, fit well into each other and the surrounding environment. In fact, Delos is a great example of how orthogonal plans can be incorporated into natural settings with minimal need for total leveling and destruction of the site.

The art of Greek urban planning was displayed at its best in Priene, a Greek colony in Asia Minor. The city was built in a gridiron pattern, with attention to movement, elevation, and placement of various morphological components in an awe-inspiring spatial arrangement. Priene is not only a great example of the merging of architectural concepts with urban design; it is also a place where the connection between the Greek view of order and social structure is clearly embodied in the physical layout of the city. The search for order did not diminish the Greeks' attention to gods, which was evident in the placement of temples on the highest grounds or other visible locations. The Greeks' concepts of democracy and social engagement directly informed the building of their cities, for a rational plan was seen as the ultimate expression of democratic order (Bacon 1974) without unnecessarily diminishing the importance of the gods. Ironically, the Greeks built few cities, other than Miletus, in Greece that benefited from Hippodomian concepts in urban planning. In fact, they were more likely to export their orderly urban design concepts to their colonies in Asia Minor and other Mediterranean regions, as opportunities to build new cities were greater in those areas than in Greece.

In addition to Asia Minor, the Greeks built cities in Egypt (e.g., Alexandria) and Syria (e.g., Antioch). But it was their orthogonal planned cities in southern Italy that had the most profound impact on cities in the West. Paestum, Agrigento, Naples, Heraclea, Tarentum, Megara Hyblaea, Piraeus, and Thurii were among the cities built or rebuilt using orthogonal Greek planning guidelines. Etruscans, whose

cities may have inspired the Roman emperors, followed this planning process as well. Some historians, including Anderson (1997), remain unconvinced that the Romans learned their town planning from the Etruscans, but it seems clear that Greek colonial cities in southern Italy may have directly influenced the Romans.

ROMAN CITIES: URBAN PLANNING AND MANAGEMENT

Greek urban planning concepts and morphological elements appeared in Roman design in an elaborate and purposeful way. In addition to the planning influence, which is assumed to have come from Greek colonial cities in southern Italy, the intellectual lineage in articulating urban planning concepts is also important. From Hippodamus to Aristotle, theories about an ideal city, including its shape and size, were textualized. Greek ideas, then, were carried not only through the physical examples of their gridiron cities but also through the transference of these formal concepts, which appear in texts by Dodorus and Strabo. By the time Romans began to build their new towns—which included military camps, called *castra*—the logic of orthogonal planning was fully documented and made available to the builders of the empire. Vitruvius, whose directives are evidence of Roman urban planning style, was one such inheritor of the Greek intellectual heritage. But Vitruvius's orders were not implemented exactly; his concepts were simply the ideals of planning. Just as we today do not follow our normative planning rules in building cities, we should not expect Romans to have followed Vitruvius's guidelines precisely. We shall discuss Vitruvius's ideas later; for now it is enough to note that, as was the case with Greece, Roman standardized planning occurred more rigorously in the empire's occupied territories than in Rome and cities closer to the seat of the power.

As with the Hellenistic phase of Greek civilization, when Greek ideals, aesthetics, and fashions spread throughout the ancient world and were a sign of being "cultured," the Romanization of the Roman Empire's subjects was an important step in tightening its grip on conquered lands and peoples. As Tacitus said of the Roman influence in Britain during the first century A.D., not only did the Britons adopt the language and clothing fashions of their conquerors, they also "were seduced into alluring [Roman] vices: to the lounge, the bath, the well-appointed dinner table. The simple natives gave the name of 'culture' to this factor of their slavery" (Anderson 1997, 183–84).

In addition to Romanizing their subjects through language and material culture, Romans recognized the importance of imposing order through managed urbanization. The visualized order granted by orthogonal planning and organized urban management techniques became necessary tools for maintaining a vast empire that spanned an area from Britain to North Africa. For this reason, the invention of urban classification, micro- and macromanagement techniques, building codes, and many other concepts were the Roman intellectual contributions to the urbanization process.

While the Greek and Etruscan empires were federations of city-states, Romans incorporated all cities and settlements within a hierarchy that formed their empire. The state determined the fate of a city, and the idea of a totally independent city was largely nonexistent. In a centralized empire tributes were necessary, and cities were part of a large financial network that had to be managed in a formal manner. For this reason Romans divided their cities into three distinct categories—*colonia, municipium,* and *civitas.* Colonia was the highest ranking a city could receive, implying that the majority of its residents were Roman citizens. A colonia was governed by a council under the supervision of four magistrates, appointed annually. In Britain and other colonies, cities in this classification category were not numerous and typically housed retired legionaries, who helped reproduce the state culturally and biologically in the far corners of the empire.

As opposed to colonia, a municipium (the second-highest-ranking city) was home to a smaller number of Roman citizens. Such a city would be governed by a council under the direction of four elected magistrates, who at the end of their service were awarded Roman citizenship. Direct engagement in governance, which legitimized the state, was awarded with cultural, social, and political Roman identity.

The last and the lowest urban rank was given to tribal towns. A civitas lacked any Roman sociopolitical and cultural affiliation, since it housed very few Roman citizens. Under a Roman provincial administrator, these cities were managed as independent administrative centers governed by the local population. This does not mean that a civitas had no council or magistrates, but rather that the local aristocracy participated in managing local affairs, becoming Romanized at a slower pace than the other two kinds of cities.

These three urban classifications, which were fully implemented in Britain, provide a clue into the Roman urban management genius that attempted to create the hegemony of *Romanitas* within its conquered

territories. The urban form introduced into Britain and other colonized areas was simply a continuation of this managerial and state-building project. From Bath to Gloucester, Romans wove their management techniques into urban design. The result was a lasting urban legacy that continued through the medieval period. In order to learn about their planning approach, we turn to Vitruvius and a few Roman cities.

While a complete treatment of Vitruvius's planning guidelines are beyond the scope of this book, the basic elements of his treatise are important for understanding the morphology of planned Roman cities (as well as for understanding what a "city" meant to Roman elites). Vitruvius divided urban morphological elements into two groups: city walls and public buildings. He avoided any discussion of residential, or what may be called vernacular, architecture, with the exception of discussing the design of elite housing units. Vitruvius thus became a voice of the urban managerial elites, whose conception of how a city should be built and managed was important to the empire. For Vitruvius, the wall was both a demarcation of the urban boundary and a symbol of defense. The gates and towers were one of his three categories of public buildings. The other two categories were religious (e.g., temples) and public service (e.g., forum, harbor, and colonnade) buildings and spaces. In his theory, urban planning began with selecting the site and determining where the wall should be built. After that, streets (or transportation network) were designed, with special consideration of the prevailing wind in order to protect alleyways and streets from the wind. In fact, Vitruvius's comments suggest that the Romans were concerned about the basic health of urban residents and sought protection against harsh climates. Once the basic transportation backbone was fully designed, religious buildings were sited. Vitruvius provided a list of religious and public buildings, ranked by their order of importance. The ideal Roman city followed a formulaic sequence.

The spatial structure of a planned Roman city was much the same as that of a Greek city. The cardinal direction of the city was defined by its major transportation routes; the residential and commercial sections were arranged along these routes. But what gives each city its distinguishing features were the size and location of public and religious buildings. Romans extended the Greek agora and acropolis into their cities, but their forum and amphitheatre (which were included more regularly during and after the Augustan age) were built on a different scale and at times for a different social agenda. As we shall see, Romans also added an element of verticality to their cities. New construction

materials and techniques allowed them to add to the height of their buildings, permitting a greater population density. This meant that building codes, public services, and urban management concepts had to be refined in order to manage the larger cities.

Despite the apparent structure introduced into the empire and its far-flung cities, the seat of power—Rome—received no serious planning or spatial reorganization until the time of Julius Caesar. His architectural contributions were monumental and gave the city its first imperial look. For Rome, however, gridiron planning was impossible. The city had to be organized through planning and management concepts rather than by physical layout alone. This does not mean that Rome lacked monumentality. In fact, architects of Rome used new buildings to give the appearance of rational organization to a city that had existed for many centuries before the rise of the Roman Empire. As Bacon (1974) explains, the sheer mass of interrelated buildings, their scale and visual containment, gave the city its aesthetic organization. To this was added movement through the Triumphal Procession of Rome, which, unlike the Panathenaic Way in Athens (which extended the length of the city), coiled into a single space. The Circus Maximus became the most important site of this symbolic movement, transferring the need for linearity of space across a city into the circularity of a single building. A mass of individually functioning buildings and their interrelationship created the planned connectivity that could not have otherwise been achieved within the organic shape of Rome. Beyond these architectural innovations, however, order and regularity of space had to be achieved through means other than gridiron planning. The sheer size of the city (in area and population) necessitated innovative management techniques and regulation of spatial functions. We look at Rome as the site of the first Western experience with complex urban governance.

From the foundation of the Roman Republic in 509 B.C. (when the Etruscan monarchy was overthrown) to 400 B.C., Rome grew minimally, from a population of twenty-seven thousand to twenty-nine thousand (Ward 1990). Spatially, however, the city grew from 830 to 1,050 acres. This translates to a small decline in population density of the city of Rome in the first century of the republic. By the first century B.C., however, Rome had grown into a major urban complex. Estimates of the population during the Augustan age, which lasted into the first century A.D., often exceed 1 million.[1] Even if population figures were smaller,

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[1] For a discussion of Roman demography and the population size of Rome, see Wiseman (1969); Packer (1969); Ward (1990); Patterson (1992); Casico (1994).

other evidence from the era indicates the enormous size of this city, a size not achieved by any subsequent city until the arrival of modern industrial cities. For example, the presence of more than forty-five thousand *insulae* (i.e., apartments) in Rome points to a very densely populated city (Packer 1967). It is therefore not surprising that Julius Caesar and Augustus established an urban agenda that rebuilt and reorganized the city. Without a doubt, these rulers were responding to the needs of the empire and its embodiment in the capital city. But it should be remembered that running a city of roughly a million people was no easy matter for a society that lacked sophisticated communication techniques. Distance had to be overcome through spatial arrangements and rules of movement that would remake the spatial structure of the city and its morphology, even before the fire of A.D. 64.

Caesar's plan for remodeling the city shocked many of his contemporaries, including Cicero, a political philosopher and commentator of the first century B.C. (Anderson 1997). He added the Forum Julium, Basilica Julia, and Circus Flaminius (which was finished as the theatre of Marcellus). Many of these monumental constructions reoriented the city both morphologically and functionally. Caesar even reworked certain sections of Campus Martius, located in the northwestern section of the city. After the assassination of Julius Caesar in 44 B.C., Augustus continued the rebuilding of Rome in earnest. He built a number of temples, the first Pantheon, public baths, and the Basilica Neptune. He also ordered restorations throughout the city. The city was transformed into an urban complex of close to a million people, living in an impressively large number of apartments stacked vertically and located along a labyrinth of street networks. This everyday architecture was overshadowed, however, by a mass of monumental architecture whose visual imposition gave the city an air of order.

Rome's urban components can be divided into six groups: the wall, street system, housing, markets, city centers, and recreation. The first wall was built in the sixth century B.C. and remained operational until the first century B.C. owing to Rome's smaller size. With the rise of the Roman Empire, Rome had little use for a wall. As the seat of power, the city was in little danger of invasion. Spatial growth beyond the older wall thus became possible. By the end of the third century A.D., however, a wall had become necessary. The Aurelian walls were built at the end of that century, encompassing the spatial extent of the city after nearly three centuries of growth. This wall was eleven and a half miles long, encircling an area slightly larger than five square

miles. This made for a city with a high population density and crowded streets.

Roman cities usually had three major kinds of streets: *itinera, actus,* and *viae.* Itinera accommodated people on foot; actus allowed for the passage of one cart and pedestrians; and viae provided enough room for the passage of two carts. Given the crowded nature of Rome and the fact that viae could not be numerous, the first traffic laws were introduced in the first century B.C. One of these regulations limited the movement of carts during the day, especially if the cart was used to transfer goods. This minimized the mortal danger facing pedestrians who had to encounter rapidly moving carts on crowded streets.

Housing in Rome fell into two categories, *domus* and *insulae*. The first consisted of single-family structures (with multiple design possibilities, which Vitruvius discussed), and the second of apartments. Domus were typically occupied by the upper classes and insulae by everyone else. The worsening of the social class division in Rome can be seen in the number of housing units in each category. By the fourth century A.D., Rome had in excess of forty-five thousand insulae and fewer than two thousand domus (Packer 1967). Given the size of the city, such a large number of housing units had to be stacked up vertically. Although the practice of building to two or three stories had been established by the third century B.C., it became important in the first century B.C. to limit the height of buildings. Building codes were thus enacted as early as the reign of Julius Caesar, and at various times building heights were limited to sixty or seventy feet. These regulations tempted Roman builders to create common walls between various structures, as this allowed them to use every square inch of land available. Given that wood was an important construction material, it became necessary to consider the risk of fire as well. The minimum distance between buildings and the requirement for using fire resistant tiles for roofing were legislated by the government of Julius Caesar. This did not solve the fire problem, however, and Augustus formally created a group of firefighters to respond to this growing urban problem.

To Augustus, Rome appeared in need of efficient management. More important than establishing fire-fighting groups was his idea of dividing the city into fourteen regions, with ward divisions and management teams. The layout of the regions suggests a logical spatial division that assigned to each region its share of public buildings and public space to manage. This creative localization of urban services

and management through selected magistrates was effectively implemented, and its basic ideas have been inherited by many cities in the West. Innovations in urban management went beyond this localization of governance and included the formation of policing functions, sewer services, and so on. The Augustan age was truly the age of urban revolution, not only in its impact on Rome but in the diffusion of ideas about cities beyond Rome.

The city center can be counted as the fifth morphological element of Rome. The center was located between the hills of Palatine and Capitoline and the end of Quirinal ridge. It grew in two ways, both through controlled growth toward what eventually became the Colosseum (originally called the Flavian amphitheatre) and through successive planned *fora*, which were built from the time of Julius and Augustus down to the beginning of the second century A.D. With the exception of the Forum Julium, the majority of the planned fora were built to the north of the Colosseum.

Markets were critical to Rome, especially given that the city depended almost entirely on imports. This necessitated the establishment and maintenance of highly developed ports and warehouses. From these locations goods had to be carried to individual shops, many of which occupied the first floor of residential buildings. The pattern of housing being located above shops can still be found in many regions in Europe and the United States. In addition to residential areas, shops could also be found around fora, especially the Forum of Trajan.

In addition to the market and the fora, a large urban complex required a significant investment in entertainment, the sixth morphological element. This need was especially accentuated by high rates of unemployment and jobs dependent on public works. Entertainment was a form of citizen pacification. The enormous size of entertainment buildings, such as the Colosseum and Circus Maximus, which could accommodate more than two hundred thousand people, suggests the Roman economic situation of massive wealth accumulation beginning in the first century, and drastic worsening by the third century A.D. Roman holidays also increased in number, allowing employment for a larger number of people. In this case, the urban morphology of Rome, and for that matter of many cities in the empire, reflects the social, economic, and cultural conditions in the empire.

Despite its eventual decline, Rome can be seen as the birthplace of the Western urban ideal, where planning, management, and architecture converged to create an image of order and hegemony. Though

Romans implemented the gridiron pattern more frequently in other cities, in Rome they enacted the urban policies and impressive public works programs that became their true urban legacy for the West. Medieval European cities inherited the Roman urban system, and despite failing to maintain continental interconnectivity, in many cases they built upon a Roman infrastructure and governance structure. Even today one can see the influence of Roman concepts in Western city council districts, geographically structured policing, fire departments, and other urban services. While Rome was in many ways an exception to the urban model of its time, and even of the urban planning principles Romans espoused, it is truly the birthplace of civil society and of Western concepts of urbanization.

EUROPEAN CITIES IN THE MEDIEVAL PERIOD

The fall of the Roman Empire and the disappearance of a formal governing structure established by a central government brought about a return to city-states and a localized (i.e., feudal) urban system. In a millennium that ended with the Renaissance in the late fifteenth century, Europe went through significant waves of social and cultural transformations that have erroneously been called the "Dark Ages." In fact, there was nothing "dark" about this era. It is thanks to Renaissance thinkers that we employ this disparaging terminology even today. While the Muslim empire flourished from the seventh to the fourteenth century, prospering through commerce and intellectual achievement, we are told that overzealous religious establishments and abusive feudal lords subjugated the good people of Europe to a life of ignorance, stagnation, and poverty. While there is no denying that the social system was abusive toward its lower classes, this is hardly an adequate explanation for the demise of cities. Neither Romans nor their appointed rulers were any kinder than the medieval feudal lords. The secular cities that arose after the medieval period were no easier for the lower classes to live in, either. The dark images of abject poverty, epidemic disease, religious demagoguery, witch hunting, interregional wars, the Crusades, and many other negative features of the so-called Dark Ages may be more closely related to the disappearances of large-scale intercontinental commerce (or to our skewed perceptions of premodern Europe, inherited from the Renaissance) than to objective fact. Being disconnected from Asia (albeit through the familiar route, which extended from Anatolia to China) by the geographic presence of the Muslim empire meant that European

urban economies became more local. Nonetheless, it would be a mistake to assume that European cities ceased to exist or lost their importance. In fact, the urban morphology of the European medieval cities provides an alternative history of this period.

Though cities like Rome did not emerge for many centuries, by A.D. 1200 there were about 250 cities in the Holy Roman Empire, west of the Elbe and the Saale (Dickinson 1945). While the number of towns was significantly smaller to the east, the growth of Germanic towns to the west points to a continuing urban tradition in western Europe. During the four centuries preceding the Renaissance, thousands of new towns were founded in the Germanic cultural area alone. Medieval Europe, especially from the thirteenth to the fifteenth century, witnessed a remarkable growth manifested in a rapid rate of urban expansion.

Most medieval European cities had small populations (fewer than twenty-thousand people), and their morphological pattern was a function of their historical origins (e.g., Roman *castrum* in the case of cities like Regensburg, along the Danube in Bavaria). While the Romanesque period (circa A.D. 1050–1200) witnessed a growing presence of the church, both sociopolitically and architecturally, the Gothic period (roughly 1200 to the Renaissance) saw an acceleration of this process, along with the gradual expansion of commercial activities. As cities began to expand demographically and structurally, the growing architectural presence of the church and the powerful elites provided an important context for the urban forms of the late medieval period.

Spatially, medieval cities were compact and contained a number of recognizable elements. These were fortress, charter, wall, market, church/cathedral, roads, and residential/vernacular architecture. The fortress was an important symbol of safety and protection, which in turn attracted a residential population. More important, however, was the charter, which allowed city dwellers to become free citizens. The medieval city thus became a city more of people than of serfs.

By design and by the nature of transportation technology, there were very few wide streets in medieval Europe. Conzen (1960) identified three functional types of street in medieval cities, from England to the planned *bastides* of France. These were heavily trafficked streets, residential streets, and occupational roads. Stores and residential units were in many cases stacked vertically along residential roads, a pattern observed earlier in Rome. The gradual agglomeration of market functions along major roads and plazas appeared by the late medieval period. Many of these urban elements are still present within the spatial fabric of older

European cities. Medieval urban morphology and its architectural heritage are thus relevant to understanding some contemporary cities, as well as the daily lives of their residents, during this historical period. A significant portion of these medieval cities remain at the core of our modern urban fabric, and, while providing marketing opportunities for tourism, they are hindrances to mobility, access to modern urban services, and urban growth. In major cities, from York to Vienna, older sections are protected for their economic and cultural values (e.g., in some cities, automobile-free zones have been created), but in smaller cities adequate resources for their protection are unavailable. In this the medieval sections of European cities share a common predicament with the old *medina* of North African and Middle Eastern cities. In fact, Asian cities such as Kashgar in western China face similar problems. Unlike many non-European cities, however, the medieval towns have fared relatively better in architectural preservation and spatial accommodation of modern activities.

Beyond providing protection, medieval city walls established a social, cultural, economic, and political boundary between city and country. The importance of this boundary is evident in the common practice of distinguishing city residents from nonresidents. In some cases nonresidents would be asked to leave the city at sunset, which led to the creation of encampments outside the city walls. Occasionally, when these temporary arrangements grew in size, cities would expand their walls to incorporate them.[2]

If walls and fortifications provided protection for city dwellers, it was through commerce that living in towns became more viable. Urban growth was based largely on the expansion of regional trade, especially in textiles. From Italy to England, cities with growing textile production, distribution, and retailing witnessed significant growth. Businesses related to textiles, as well as urban services such as inns, which accommodated traveling merchants and their staff, also gained economic momentum. From Venice to Bruges, Amsterdam to London, this growing urban market meant that more sophisticated ports and warehousing developed, and that a growing portion of the population could be employed. In fact, urban growth during the medieval period fed and stimulated, in a reciprocal manner, the agricultural economy of rural areas as well. The centrality of the textile industry meant that a decline

[2]Expansion of walls to incorporate adjacent settlements and small villages has been documented in a number of publications on medieval cities. For example, see Nicholas (1987).