Part One

On Urban Operations and the Urban Environment

Defining Urban Operations

This study investigates the nature and conduct of modern urban operations. As a distinct type of military action, urban operations may well be the most influential form of conflict in the future. For some, urban operations are already the preferred form of military action. Others are very likely to discover the advantages of operating in this particular way in the future. If these trends continue, it means that the conduct of modern war is about to turn a sharp corner, away from its customary forms, toward different, less well-understood modes of action. If experience is any guide, this turning will not be dramatic; it will be composed of a thousand minor events, accruing so gradually that it evades notice. The sharp corners will be clear only in retrospect. For the moment, therefore, the question becomes: what can be known now about this mode of operation, and how should that knowledge affect our thinking?

It is significant that no generally agreed upon definition yet exists for these sorts of operation. Here, urban operations are considered broadly; they are all those military operations involving an urban environment.[1] This working definition is used in order to examine how the urban environment influences the conduct of military operations in general, as well as to consider this particular kind of military operation from a longer perspective. A longer perspective is needed just now, when military professionals everywhere are beginning to think seriously about urban operations for the first time in several years, and when armies are making new calculations about the rightful place that urban operations should occupy in the larger world of defense strategies.

As with any complex subject, first encounters with urban operations are likely to be confusing. A kind of vacuum surrounds the subject. No body of military theory directly addresses this kind of operation. Military doctrines are long out of date. Studies of urban battles generally do not address city fighting in a way that would be useful to a military professional who is trying to understand what makes this form of war unique. Under the circumstances, opinion holds court

unencumbered by fact. The unfamiliar is often mistaken for something new, even though very little about urban operations is new at all.

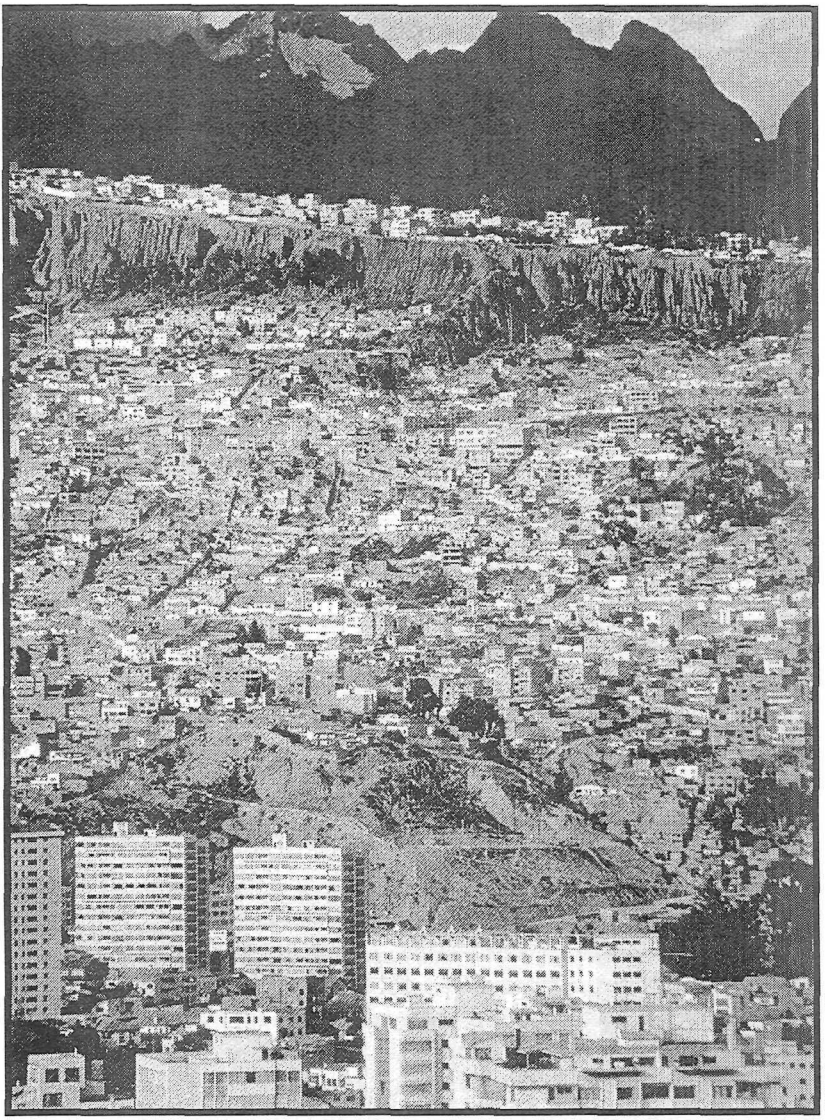
But urban operations *seem* new. In fact, today's resurgence of interest is attributed to reasons that would not have sounded new even twenty years ago, namely:

- The performance of conventional forces in recent urban operations.
- A perceived increase in the frequency of such operations.
- A perceived imbalance between the national cost and national benefit of such operations.
- The proliferation of advanced public technology available for military use.
- The proliferation of weapons of mass destruction.
- Perceived increases in the proliferation and capability of unorthodox, or asymmetric, threats.
- Global and regional population trends.
- Global and regional trends in urbanization.[2]

As an experiment, if one were to deduce from all these concerns a picture of future urban conflict, it would be a dark vision indeed: unorthodox threats, challenging by asymmetric means the professional armed forces of the leading nations, in which the preferred locale of operations is the ever-expanding and volatile urban population and infrastructure of the developing nations.[3] Although most certainly overdrawn, this general appreciation of the operational future stands behind the several different perspectives on urban operations that have appeared lately in defense circles.

One of these perspectives, inevitably, argues that urban operations in the future will be so different as to constitute a wholly new form of military operations. This school of thought implies that experience is of little use and, indeed, that all we know of the history of conflict does not apply in this special case. As with all such arguments, this one has the virtue that no one can say with any certainty whether it is right or wrong.

At the opposite end of the argument, one hears that urban operations really are quite simple and are only a subclass of tactics. Urban operations demand hard, specialized training but little professional preparation. Some relatively simple technological advancements may prove useful, but there is "no silver bullet" where urban operations are



Still Pictures, UK

La Paz, Bolivia. Trends stop here?

concerned. As in the past, only expert soldiering will do. As evidence, one need only point to the many operations of this kind conducted by the United States and other nations in the half century since the Second World War. All that is needed now, so the argument goes, is to take account of lessons learned but forgotten along the way.[4]

Somewhere between these two perspectives lies a third, still in its infancy, but benefiting from enthusiasms created by the so-called "Military Technical Revolution." This view argues that technology has the power to render a difficult problem manageable. Perhaps not a single "silver bullet" but a combination of silver bullets will do. This argument holds a certain appeal by appearing to assuage official anxieties over friendly casualties; indeed, it hints at the possibility that death and destruction can be quarantined by precise means. There is reason to believe that this school of thought is winning more and more converts.[5]

Finally, no effort is required to find the traditional school of thought on urban operations. Indeed, most professional soldiers from the last several centuries would recognize the majority view in the leading armies today: it states that cities are no fit place for armies. Wars are never won in cities, and quite a few have been lost in them. Armies surrender every advantage they possess when they enter a city, and from the moment armies cross the line between landscape and cityscape, the environment turns against them. In war, cities are usually an annoyance and certainly a distraction from the main effort. Avoid them at all costs, or quarantine them from the rest of the war if they are unavoidable.[6]

So conventional wisdom makes a strong case for urban operations as a different and inferior kind of military action—so different as to constitute a different type of operation altogether. Of course, it is this particular environment, first of all, that works such a dominating influence over operations. An urban environment may turn otherwise routine operations into operations that are anything but routine. The most important feature of urban operations is that they *are* urban. That is why the first step to understanding them is to understand the unique environment in which they occur.

The Natural Environment and the Nature of the Urban Environment

The natural environment is an army's natural habitat. It is where an army is conceived, designed, equipped, and trained for optimum

performance, where, given a choice, its commanders and soldiers will choose to function. Modern professional armies now divide the natural environment into five general kinds: the arctic, mountains, jungles, deserts, and woodlands.[7] There is general agreement among military professionals that each of these environments requires specific fighting doctrines, organizational adjustments, specially adapted arms and equipment, and specific training. Each of these environments makes particular demands upon soldiers and their commanders, but they are demands that can be analyzed and understood, anticipated, answered by planning, and capitalized upon in execution. Modern armies have learned that ignoring or minimizing the environmental context of their operations can be dangerous. Each of these natural environments has the power to defeat an unprepared army as surely as any enemy.

As physically different as these environments are from one another, they are alike in one respect *from a military point of view*. Before the armies arrive and operations commence, the pace of change in these environments appears to be relatively *static* (relatively, always, as combat engineers trying to bridge a recently flooded river might well attest). The interaction between a natural environment and a military force is usually limited and temporary, although military history records the most prodigious feats of military engineering when a general decided that nature was working against him. When General Grant attempted to circumvent the Mississippi River during the Vicksburg campaign, he followed in the footsteps of the Persian King Cyrus, who diverted the Euphrates River so that his warriors might wade into Babylon rather than assault its walls.[8] But even these military operations did not change the fundamental character of the landscape. Obviously, the natural environment can be changed, and vastly. But an army's purpose lies in another direction.

Once an army's mission brings it into contact with an urban environment, that army is best served by understanding these surroundings as well as any other place where it might act. At first glance, this rule seems theoretically desirable but practically impossible. Urban areas, so vastly different from one another and so individually complex, seem beyond the reach of a general, practical view that can be of use to a commander and his soldiers. One could say the same about mountains, but cities, like mountains, share certain common features—features that could play a critical role in any military operation. What are those common features?

The urban environment is, first of all, a human environment. That makes it different from all other forms of environment. An urban

environment is not defined by its structures or systems but by the people who compose it. Philosophers once speculated that the earliest settlements arose "naturally," as if humans were guided into a place by some invisible structural law—a speculation for which no evidence exists. The earliest settlements known to history were not "natural" at all; they were established by human purpose and will.[9] Jericho, of biblical fame, is reckoned to be ten thousand years old, but its ruins show it to have been meant for defense as well as trade and worship. The nature, shape, and functions of any urban environment, regardless of time or place, are determined, in the final analysis, by those who create it and sustain it. What all this means is that the urban environment *reacts and interacts* with an army in a way that no natural environment could.

Because the urban environment is defined by a variety of human beings doing different work, it is a highly dynamic environment. Any human collective of any size, megalopolis or village, lives in a constant state of human and material motion. Anyone who stands at an intersection on a modern city street is struck first by its dynamism—the scale and pace of activity—but a closer look will show that this action is orderly. Not only is the intersection designed for its purpose, but people use it in a particular way. In return for their cooperation, the traffic moves, and they have a good chance of crossing the intersection in one piece. This social and material order—urban cohesion on a grand as well as a microscopic scale— enables a city to work as a city.[10]

Urban cohesion has often figured importantly in war and conflict. Soldiers throughout history have struggled against cities' power to resist, to withstand sieges lasting months or years, or to absorb the punishment of entire armies fighting within their precincts. Of course, the human quality that makes cities so resilient under stress can also be a source of vulnerability. Being chiefly human, cities can be killed. The final destruction of Carthage in 146 B.C. has come to stand for all cities killed by war. The Roman senators demanded the obliteration of Carthage when their legions finally took it after years of fighting. Ninety percent of the population had been killed or starved to death. The survivors were sold into slavery. The buildings were pulled down. The barren ground was sown with salt, but this was merely a gratuitous insult. Without Carthagenians, the Roman senators knew, there would be no Carthage.[11]

Cities are, after all, built to function in peace.[12] Once established, cities operate at a certain pace and rhythm unique to themselves, depending on the vitality of their social and material cohesion.

Furthermore, the process by which a city lives is not a degenerative but a regenerative one. Left to their own devices, cities do not decline. They persist.[13] But it is also true that, at some point, equally unique to a given city, a city's adaptive power can be overwhelmed, its cohesion disrupted. Natural disasters, industrial disasters, civil disorder, military conflict, or outright war—any or all of these can test a city's common systems and functions. At some point, the city begins to disorganize itself. The machinery of the essential and the commonplace—civil order, power, distribution of food and water, transport, medical care, communications—grinds toward an eventual halt. Then, the city *in extremis* becomes a different entity altogether—a place now hostile to its original reason for existence.

To appreciate how cities behave in war, we first have to see how they behave at rest, so to speak.

The Natural History of Cities

Cities form such a common backdrop of modern life everywhere that we rarely if ever see them in an analytical light. That, we can leave to urban planners, architects, civil engineers, and other experts. They make it possible for the rest of us to be at ease in the city, to function in that environment without quite understanding it.

The commander whose force is about to become entangled with a city has no such option. He must be able to understand the city from a *military point of view*—quite a different view from that taken by a resident or even an urbanologist. Seen as a military problem, an elevated expressway curving through a central urban core district (as one does in Houston) is a problem different in kind from the one considered by the planner who designed it. Seen as a military problem in 1945, Berlin's beautiful central park, the *Tiergarten,* posed an obstacle that required the attention of an entire Soviet army. In short, the commander must be prepared to "read" the city before him just as he would read a pastoral scene that could become a Somme. Knowing about cities in general, how their structures relate to their functions, and appreciating how those functions change under different circumstances are good first steps toward developing this professional skill.

In the urbanized world of the present, it is difficult to imagine a time when cities did not dominate human life as they do now. Once, cities were rare, and they were small. Ancient cities seldom had more than a few thousand inhabitants. Very important cities—Baghdad, Aleppo, Nineva, Ur—covered fewer than a thousand acres. A very few, truly

Photograph not available.

A suburban Siegfried Line, somewhere in Florida

exceptional cities—the world cities of their time—began to appear in the third millennium B.C.[14] When the Greek historian Herodotus gave us his description of fifth century Babylon, the city was already 2,400 years old, much besieged and much captured. East of Babylon, in the great river valleys of the Indus and the Hwang-Ho, cities as great as anywhere grew up: Mohenjo-Daro, Delhi, Nanjing, Canton, Beijing. The few great cities of the ancient Mediterranean were smaller—Constantinople, Alexandria, Athens—but still could count several hundred thousand people within their walls.[15] At the height of its classical growth in the fourth century B.C., Athens was said to have contained at least 200,000 people of all classes and kinds from their known world. Already the Greeks had coined the word *megalopolis*, but the city given this name had a population only one-fifth as large as Athens itself. To the Athenians, their own city was *metropolis*—the mother city.

Metropolis is a term that ought not be taken too literally, however: cities have assumed any number of shapes, so many that only the most general typologies are possible. In general, cities are built to meet the requirements of the place and day. Societies in which religious or secular power is highly concentrated seem to have a particular fondness for the radial design—all roads leading to and from the center of power, as if the power is magnified by the flow of social activity. Baghdad was designed by the Abbasid Caliph al-Mansur in 762 A.D. to be a round city, with his palace as the epicenter, enclosed by walls. These were protected by his army's barracks, also protected by a wall, which was itself surrounded by residential quarters protected by a third circuit of walls. The whole city was to have a radius of two miles. Beyond the outer walls were the bazaars. If the city actually conformed to al-Mansur's plans, it did not do so for long. Within a century, its population had reached a million. By one estimate, it was the largest city in the world during that period.[16] By then, Baghdad had come to resemble any number of other *medinas*, whose designs have often been characterized as "irregular."

As a city form, the *medina* can be found from the Indus to the Atlantic. Rules and customs guiding the shape of Islamic *medinas* were taken from the Qur'an and related traditions. They perpetuated the vision of the *medina* as a private place in which the family had sovereignty and took precedence over public functions. The primary structure in such towns is the neighborhood—the *hara* in Cairo and Damascus, the *hawma* in Algiers. The residences making up the neighborhoods show a blank, unadorned face to the streets outside and

instead open inward upon a court. To those unaccustomed to such a place, housing might seem to have developed without reference to public mobility, but it would be more correct to say that the reference is different. It was possible for a street to be captured over time by the gradual encroachment of neighborhoods. Houses might extend themselves like a bridge over a street; one or both ends of a street might be given iron gates to be closed at night, or one end might be blocked completely, to prevent through traffic. One authority estimates that in Ottoman-era Cairo and Aleppo nearly 50 percent of the streets were dead-ends. Even so, streets were to obey certain forms themselves. One form in particular, derived from an aphorism of the Prophet, required that a street be wide enough for two working camels to pass—seven cubits. This rule was often honored in the breach. Secondary and tertiary streets were dark, narrow, winding, and, in original form, unhealthy in the extreme and vulnerable to fire. But *medinas* are not merely jumbled residences and neighborhoods. The mosque and the market, or *souk*, always have central places in the town where major thoroughfares can be joined to them, radiating outward, toward the countryside. The old *medinas* look disorganized because their form is irregular. But that is not the same as saying that *medinas* are irrational and therefore cannot be understood by virtue of their designs. Far from it.[17]

If there is a universal form for cities, it must be the *grid*, lines of streets at right angles to one another, a design urban planners call "orthogonal." Evidence of towns designed along the pattern of a grid can be found in all periods and places: the grid belongs to no one and to everyone. Often stigmatized as unimaginative, it is the most adaptable of any organized urban form. Grids can form the core of cities that guard mountain defiles, anchor seaports, and occupy hillsides or hilltops, as well as any topography in between. A grid can take over, in effect, from a city whose original radial design was appropriate for a particular location that it has outgrown. A city designed as a grid can be artless and authoritarian, but so can any other design. Designs do not determine the character of a given city. They reflect it.[18]

Whatever the early city's design, a wall was likely to protect it. City walls seem to be as old as cities. The oldest known city, ten thousand-year-old Jericho, was enclosed by a huge stone wall. Babylon's famous wall, with its hundred gates, was said to run eleven miles in all. A little later, about 1200 B.C., the Thebans had their hundred-gate wall as well, while in China, at Soochow about 430 B.C., walls enclosed more than a thousand hectares. By 700 A.D., China had

seen one of the greatest city walls ever built at Chang'an, enclosing a thirty-square-mile area, along with one million inhabitants.[19]

Walls served more than a simple defensive purpose. As Lewis Mumford has observed, the city wall "made almost compulsory" the unification of "functions that had heretofore been scattered and unorganized"—"shrine, spring, village, market, stronghold."[20] Walls also served notice to those who wished to enter that one had to fit his conduct to customs and laws within. Market towns found walls to be useful control points for the collection of tariffs regulating trade and traders. Larger municipalities would specifically define the range of their authority by the circuit of their wall. Paris' own "tax wall" persisted well into the modern age. As for the military advantages conferred by walls, walled cities seemed to attract conquerers as much as deter them. Isfahan's experience, with its twelve miles of walls, was not unusual: in 1387, Tamerlane took it and slaughtered all 70,000 of its residents.[21] The same fate befell walled cities the world over.

The Greek cities had created colonial miniatures of themselves since the ninth century B.C. *Metropolis* was less a term of endearment than a practical description. Each of the Athenian colonies had an *agora*, or public market, just as in the original. These *agorae* were divided into trading circles, or *cycloi*, in which certain goods were marketed. The fish market, for instance, was the *icthyopolis*. Watching over the whole was the shrine to the gods, the *acropolis*, which always found commanding ground and, when the situation warranted, could be employed as a citadel. The situation often warranted that.[22]

In some way, all cities performed (and still perform) one or more specific functions: habitats, monuments to religious or secular power, trade, defense, safety. How localities attended to these functions varied according to immediate circumstances, but the functions themselves attracted people away from the solitude of the countryside to the cities. It was the magnetic effect of cities that Aristotle wanted us to appreciate when he wrote that "men come together in the city to live; they remain there in order to live the good life."[23]

Rome followed Athens' example famously, ruthlessly, successfully for a time. The city began its life very deliberately when, in the third century B.C., King Servius laid out a rectangle of one thousand acres and arranged for it to be enclosed with a wall wide enough at the top for two chariots abreast. The whole was quartered by two avenues, laid on the north-south and east-west axes. Before Rome's imperial career was over, it would seed more than 5,000 towns throughout the Mediterranean to Asia Minor. The Roman "New Towns" were built

according to the standard of the Metropolis, a pattern specified as 2,400 feet long by 1,600 feet wide, that would not contain more than 50,000 inhabitants. Later on, the bivouacs of the Legions used exactly this design, and some of the towns settled by the Romans really began as little more than temporary military camps. Although the Romans hoped their New Towns would be as disciplined as legionary bivouacs, never were rules violated more lustily.[24]

Indeed, the idea that the plan for a town, once laid down, would be followed faithfully, then and evermore, has been a persistent one throughout history, and one just as persistently violated. Most cities, regardless of the intent or plan or vision at origin, are best viewed as the product of successive plans, overlaid on one another, or stitched together across an obliging landscape (or an altered landscape, as the case may be). They grow by accretion, phases that are the urban equivalent of a geologist's sedimentary layers or a botanist's tree rings. This process can be seen in Cairo's history. Invading Muslim armies established a camp, Fustat, in 641 on the east bank of the Nile. A century later, Fustat fell to the Abbasids, who established a new camp, El Askar, slightly to the northeast. Another century later, a rebellious local governor ordered a new headquarters built north of El Askar, which he would call al-Qata. In 967, yet another invasion occurred, this time by radicals from the west who put up another walled town still farther north that would celebrate their success. This town they would call "The Victorious," or al-Qahira. This chain of closely related settlements was finally bound together when, after 1169, the area was reconquered and a citadel was built immediately to the east. Fustat, El Askar, al-Qata, and al-Qahira eventually merged to become Cairo.[25]

Rome occupies a special place in the history of cities: it was the first to reach a population of one million. This, it likely did in the year 100 A.D. To the east, other cities were certainly on their way to a million people: Chang'an, in China, probably reached a million by the eighth century A.D.; Baghdad may have had a million inhabitants when the Mongols sacked it in 1258.[26] When a city approached this magnitude, how to accommodate growth became a preoccupying question. Since the challenge was progressive, not merely episodic, there was no final solution, only a series of adjustments, each of which sustained equilibrium for one moment more, until the next challenge. Six centuries after the Servian Walls laid down the outline of Rome's ambitions, the city had far outgrown its original limits. The new Aurelian wall went up in 274 A.D. to protect an area more than three times that of the original, but even then the total area of Rome, beyond

and within the new walls, was nearly five thousand acres.[27] Of course, the character of these adjustments was determined by local needs. An outsider might be shocked by the solution of the moment, but the solution would not be his to judge. Universal standards tend to be misleading in such questions.

With the imperial *metropolis* fast becoming the *megalopolis* after 100 A.D., Rome is for many the embodiment of imperial decadence, seeing in the ultimate "fall" of Rome larger "lessons" for civilization. What is much clearer, however, is that urban problems that seem of more recent vintage can be found very early in Rome, beginning with the problem of overcrowding and the Roman solution for it. Although the common Roman dwelling in the countryside was a one-family house, congestion in the central districts became a real problem as early as the third century B.C. Four hundred years later, less than 20 percent of the whole population lived in their own houses; one estimate shows that of the million inhabitants, 821,000 lived in tenements as many as six precarious stories high, the notorious *insula*. One century after that, there were 46,602 *insulae* on record, but only 1,700 or so single-family houses.[28] Significantly, these *insulae,* death-defying as they were, would set the limit for *vertical* city building until the invention of the elevator 1,500 years later.

Any given settlement, accommodating demands of growth, will pass a point at which self-sustainment is no longer possible. This point might best signify a town's transition to city, for while towns or villages may provide for themselves, cities must depend upon surrounding, lesser towns.[29] Cities never exist in a vacuum but only as part of a wider network of settlement. Cities have always grown outward, and even the earliest cities give evidence that, whatever their original boundaries, there were always settlements to be found at the fringe or just beyond.[30] In this respect, at least, Rome was quite typical. When the Romans used the word *suburbium*, it described a trading area surrounding the city equal to about one day's travel in any direction.[31] And, of course, the traffic between city and countryside was just as important to one as to the other, but at a certain stage, a local exchange was insufficient. A city requiring more than 200,000 tons of grain a year to feed itself, as Rome did, is too large to be sustained by any area less than imperial in scope. Just as clearly, the exchange was hardly equal. At some point, the *megalopolis* became *parasitopolis*, drawing more from its sustaining environment than it returned.

How, why, and when this early experience of urban gigantism began to decline has been a matter of argument since the event. What is not

Roloff Beny/National Archives of Canada/ISN 486296

A modern Medina

subject to dispute, however, is that beginning in the middle of the fourth century A.D., that decline did begin to tell upon Rome. By the ninth century, the city of a million had declined to a population of only 17,000 residents. Thereafter, its rate of growth lagged far behind that of other, newer cities. By the eighteenth century, Rome still had only about 50,000 inhabitants. For 1,600 years, no city in the west would equal Rome at its ancient best.[32]

Questions of Scale

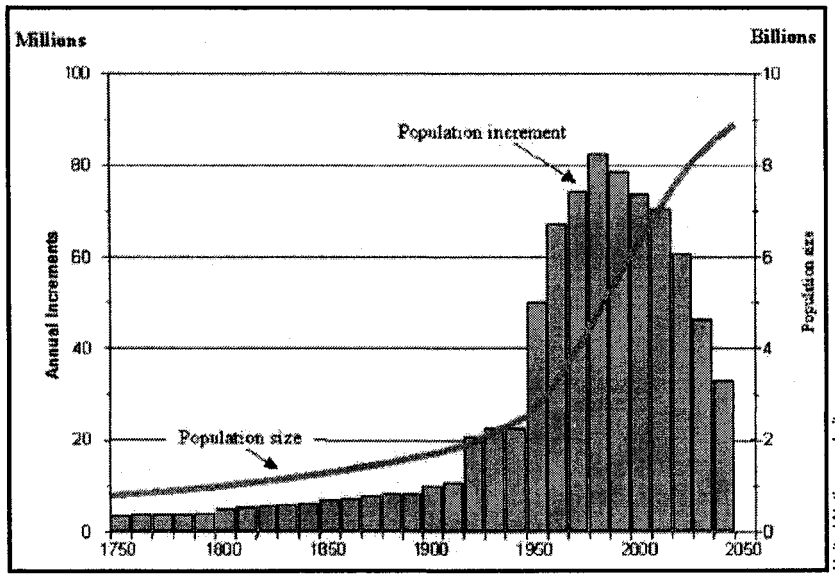
When Rome was largest, global population growth was, of course, neither steady nor uniformly distributed. Some 64 percent of the world's people could then be found in Asia. Standing then at about 300 million people, surges in growth in one locale were offset by disease, famine, and other hardships elsewhere.[33] Over the course of sixteen centuries, disasters of truly monumental proportions recorded by history did not appreciably affect population growth. In one four-year period during the fourteenth century, the famous Black Death epidemic killed nearly one-fourth of Europe's entire population, and lesser but still horrendous epidemics were common well into the eighteenth century. Wars were never so effective at taking lives as disease, but the Thirty Years' War in the first half of the seventeenth century was shockingly bloodthirsty even by the standards of the age. Estimates are that upwards of 20 percent of Germany's population was consumed by the war. However, none of these demographic disasters was sufficiently powerful to reverse population growth. Between 1100 and 1500, the number of towns in Europe alone doubled, usually in association with the rise of centralized, royal power.[34] In any case, one generation's growth was more than sufficient to fill in the losses from war and plague. By 1750, the world's population had doubled after 1,600 years: it stood at 600 million.[35] But this was a truly historic moment when a population surge of unprecedented magnitude was about to begin.[36] Little more than half a century later, in 1804, the world's population reached its first billion.

London inaugurated the era of the megalopolis, becoming in 1801 the first western city since Rome to reach a population of one million. Then, only fifty years later, London added a second million. One century after London first broke Rome's old record, eleven such cities had grown up: Paris, Berlin, Chicago, New York, Philadelphia, Moscow, St. Petersburg, Vienna, Tokyo, and Calcutta.[37] Today, depending on whether one counts immediate or surrounding administrative divisions, there are probably more than two hundred

cities in the world whose population easily exceeds one million citizens.[38]

Sir Peter Hall, the leading urbanologist and planner, believes it was not until after 1800 that cities "became big enough and complex enough to present real problems of urban organization."[39] When a city outruns its capacity to provide for itself, it has also attained a new stage of complexity. This is the point at which questions such as the competition between population and space take on a different complexion altogether. The point of complexity is a qualitative, not a quantitative point, not simply the difference between one fire station and several fire stations—to take a mundane example. Several fire stations raise the question of equitable placement or appropriate placement—which? The frequency of fires in a given urban area could just as easily be considered a social as well as a practical observation. One fire station requires only a volunteer company. With several fire stations, one begins to think about a permanent organization, with all the calculations and other details of management that would entail. Suddenly, a simple matter is elevated to a public matter. Reaching a point of complexity means not merely that there are more moving parts but that the moving parts move differently.[40]

A city's outer limits, for instance, had long been defined by how far a worker could commute on foot for one hour from the city's central districts, where most day work was to be found.[41] But when a city's growth made this impracticable, the alternatives were less and less conducive to civic—and also to public—health. The density of a city's core population would rise to alarming levels—alarming, especially, to those who saw in crowded cities every dangerous habit and sentiment ever cultivated by man since the Fall. Cities had always made an attractive stage for moralizing, but the cities of the Victorian age gave self-appointed promoters of right conduct more ammunition than they could have ever wanted.[42] One contemporary critic of urban life helpfully satired genteel attitudes toward cities and those who mostly populated them, attitudes that seem to have changed little since he isolated them in 1899. The given wisdom of the time consisted of six indictments: those born in the city dominate the poorest parts of the city; city-born make up most of the lower social classes; city-born make up a disproportionately large percentage of "degenerates, criminals, lunatics, and suicides"; cities in general have a low "rate of natural increase" and a high rate of "deficient" births; and therefore, the "city-class" is "incapable of self perpetuation"; notwithstanding all this, there are just as many country born as city born in a given city,



The demographic revolution

meaning, of course, that the better half is oppressed by the worst half of a city's population.[43]

No nineteenth-century cities were better demonstrations of the complexities of scale than London and Paris. Neither city could effectively absorb its rapid growth. Workers still had to live close to their work. The destitute and the poorest workers lived on top of one another in tenements that would have fitted perfectly in ancient Rome. London's 1851 census showed 2.8 million people living within 116 square miles. Within the concentrated slum areas of central London, whole families existed in rooms of eighty square feet. As might be expected in an area that produced 20,000 tons of horse manure each year, London had no effective municipal or sewer system, and so disease was rampant. Between 1831 and 1841, death rates in London actually rose by 50 percent. Life expectancy in ancient Rome had been reckoned at thirty-five years of age; in London in 1841, life expectancy overall was thirty-seven years of age, and lower still in slum areas.[44] Complexity and progress do not always go hand in hand.

Londoners visiting Paris in the midnineteenth century gasped, however, at what they considered uninhabitable congestion. During Baron Haussman's famous reconstruction of Paris at midcentury, the

city was increasing its population from 1.3 million in 1850 to almost 2 million by 1870, reaching densities of 1,000 people per hundred acres in the central *arondissements*. Of course, the newest arrivals, always the poorest, were blamed. They were miserable by an act of will. Disease, crime, poverty, gang warfare, spasms of insurrectionary and near-insurrectionary violence: all this was in the nature of what one veteran Parisian called "the new barbarians."[45] None of this would have been unfamiliar to a nineteenth-century New Yorker, except that toward the end of the century, the poor in that city were the new immigrants who crowded onto the Lower East Side at a density of 260,000 per square mile (for a few blocks here, density ran as high as 1,700 per acre).[46]

Very likely, people have struggled to get out of cities as long as they have struggled to get in them. So the interaction between the city and its periphery would seem to be a straightforward one in which pressures on the city proper are relieved by its suburbs. But the demographic explosion after 1800 posed unprecedented burdens on the cities, and the way cities responded was by no means uniform.

Little could be done—was done—by any of these overburdened cities until a wholly new factor was introduced into the city environment. Long-standing ratios of urban time and space were to be turned on their head by the advent of public transportation systems. But the effects had to be within everyone's grasp, not merely that of the privileged classes, who in any case had never been constrained by the old systems. London began its first steps toward mass transportation in the 1840s and had a working system by 1863—the world's first.[47] But despite the innovation of "workmen's trains," which ran cheapest, earliest, and latest each day, a full generation would pass before day workers could afford to live very far from their work. The suburbs in England and America (and those who built them) profited by their access to these systems to become bastions of middle-class gentility, and they have so remained. Elsewhere, cities related to their suburbs quite differently. The continental elites, as a rule, refused to be tempted out of their cities. Once Paris was "renewed" by Baron Haussmann's reforms, rents in central Paris ran so high that workers were forced to abandon their slums for dense shantytowns at the edge of the city's limits. In Vienna, the creation of an industrial belt beyond the new *Ringstrasse* served the same purpose, if more humanely, of leaving the central city to the fashionable classes. Before long, more than thirty working class districts attached themselves to the industrial belt.[48]

The old ratios of urban time and space were to be redrawn on another plane as well: the vertical. The builder's art had not really advanced upward since antiquity. Real physical limits kept buildings below seven or eight stories at most; five stories was everywhere typical, from ancient Rome to modern Paris, London, and New York.[49] City skylines were flat, punctuated if at all by spires, minarets, victory monuments, or some ornamental structure not encumbered by habitual, practical use. Just as a city's outer limits had been set by how far a worker was likely to commute by foot, a similar limit seems to have influenced building heights: why build tall buildings anyway if people would not climb that far? Compounded with this social preference, the real risk of collapse or fire made tall buildings both unprofitable and undesirable. Thus, two changes were required, with progress in the one depending materially upon progress in the other. From the middle of the nineteenth century onward, and in America at first, the art of taller buildings and the art of the elevator advanced symbiotically. By 1900, the century of the skyscraper had arrived.[50]

For quite some time, all cities had been forced to apply themselves chiefly to sustaining urban mobility.[51] Reforms in public transportation during the nineteenth century had enabled the urban machine to run at a higher speed, volume, and distance. Momentous as these developments were, what followed worked new differences in how urbanites interacted with their world. The immediate agent of this change was the automobile, and the city that embraced this change most enthusiastically—and successfully—was Los Angeles. Municipal boosters in L. A. liked to depict their city as poised on the threshold of the future. By creating "the first mass motorized city on the planet," L. A. lived up to its billing.[52]

Los Angeles enjoyed several advantages that escaped older, eastern cities, not least of which was that it was small and relatively underdeveloped when the automobile made its debut. Like other rising American cities, L. A. had invested in public transportation; interurban rail lines connected several smaller communities with L. A.'s central business district. By the 1920s, all suburban roads led to L. A. in a radial network reaching as far out as thirty miles. And since developers would not risk building houses more than four blocks from a streetcar line, these lines were punctuated by bubbles of development and an occasional smaller community. In other words, Los Angeles was already a polycentric urban area ready made for the automobile age.[53]

Aristotle's ancient dictum on cities was about to be revised: people collected in cities, not so much to be together as to make the better life

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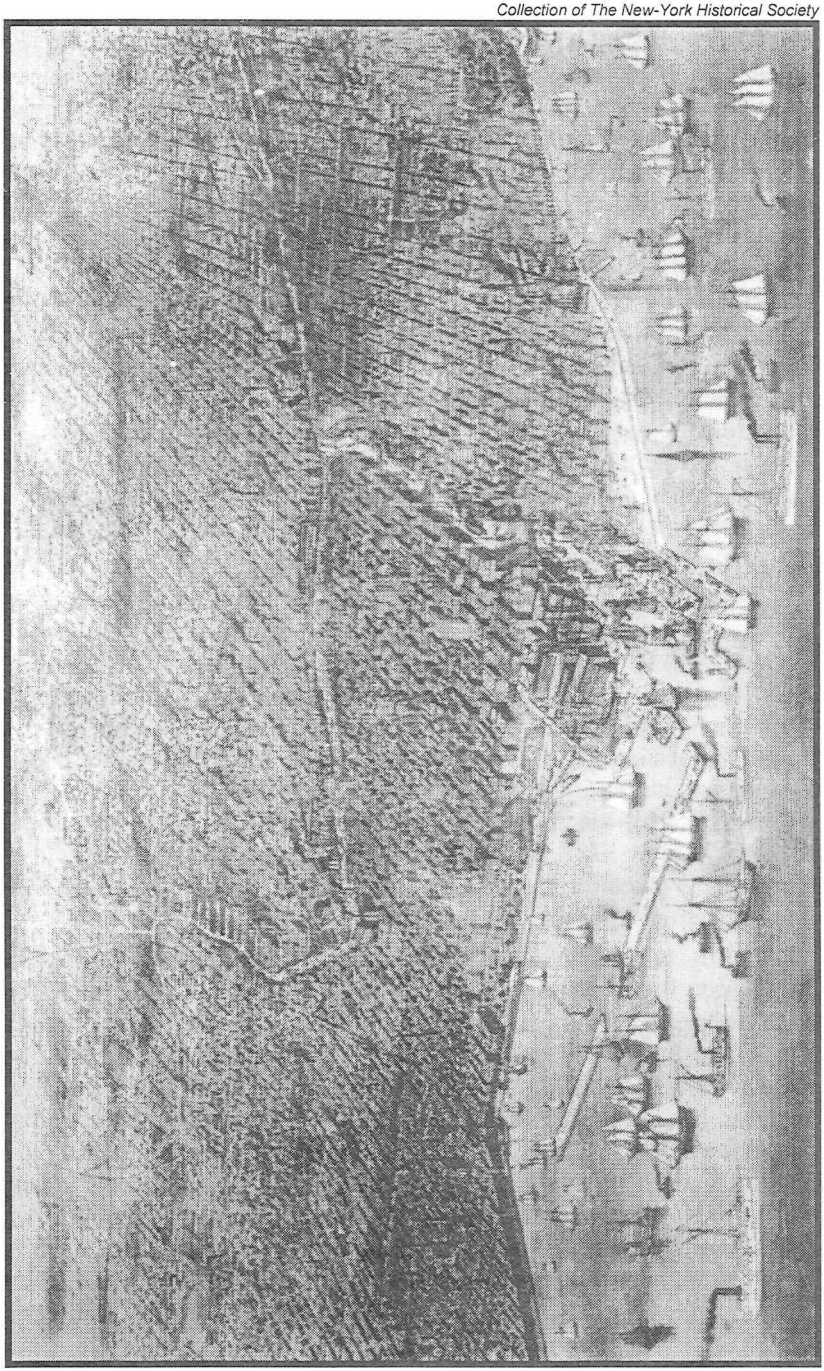

Chicago, 1892. The city goes vertical.

that being together had made possible. Once cars enabled one to make a good life without contributing to urban congestion, Los Angelenos had a new choice to make: how far to live from one's place of work. Freedom of movement expanded greatly when one was not bound by the limited patterns and schedules of public transport systems. In effect, the automobile made it possible to construct one's own city, without reference to the city's organization.[54] If one desired, one could make a different city *every day*. Traditional points of reference, old calculations of time and space, no longer counted. Even before World War II, downtown L. A. began to decline; growth followed the suburbs. The rest of the United States seems to have followed L. A., as no doubt its early boosters would have wished: by 1990, more of the population of the United States was found in suburbs than in urban and rural areas combined.[55]

In light of this, it is interesting that suburbs and the way of life they produce attract little serious attention except by land developers and urban specialists. For most Americans, suburbs are so amorphous as to suggest no identifying features at all: political travel writer Robert Kaplan sees only a future marked by "vast suburban blotches separated by empty space."[56] However, it may be useful to think of them more concretely. First, suburbs are not cities themselves, but without cities there would be no suburbs. Today, the world over, cities have seen themselves surrounded by suburbs, whose combined population far outnumbers that of the city proper. The city of Rio de Janiero reported a population of 5.4 million in its most recent census, but the entire metropolitan region counted nearly as much again, 10.3 million people in all, distributed in fourteen different municipalities. Nevertheless, each suburb draws its economic and material and perhaps even spiritual sustenance from the metropolis—not from each other. Second, suburbs are smaller entities than their metropolis; not one of Rio's suburbs begins to approach Rio itself.[57] Third, because suburbs are smaller, they are also simpler, less complex. The complexity factor works in reverse here: there are fewer moving parts and the whole machine performs fewer operations. Finally, suburbs tend toward homogeneity, a certain kind of sameness with cohesive social properties that could be based on ethnicity or religion or economics or even ideology. Suburbs, simply, make it possible for urban populations to redivide and rearrange themselves. In this respect, Potomac, Maryland; Burbank, California; Westport, Connecticut; and Schaumberg, Illinois, are no different from Tokyo's Tama New City, Mexico City's Pedregal, Rio de Janiero's Neves, or Singapore's Johor. Each of these suburbs exists

only in reference to the larger city. That reference is the suburb's *raison d'etre*.

Ten Cities and a Future

In October 1999, the world's population passed six billion. Only a dozen years had been required to add this latest billion, and only thirteen years before that, in 1974, the fourth billion was added. Compared to the great demographic surge beginning in 1750, the acceleration experienced by the world after 1950 was more powerful by several orders of magnitude. If, geologically speaking, 1750 registered 7.0 on the Richter Scale, 1950 was off the scale. By 1965, the growth rate of the global population was 2 percent per year. Five years later, the growth rate began to decline, so that today its stands at 1.31 percent per year, meaning that 1999 will record a global net gain in population amounting to 78 million people. Seen another way, the world's population has roughly doubled in less than forty years, a truly singular record in the history of population growth.

These figures, taken from a recent report by the United Nations, are derived from the best available data and can be regarded as authoritative descriptions of recent population trends. These data are also taken as the basis for calculations of future trends—quite a different proposition altogether. Of this year's new additions, for instance, it is estimated that 95 percent will live in less-developed regions, an estimate that seems as tenable as one could expect. In the same way, the UN's report estimates future growth rates and population distribution patterns as much as fifty years hence. By these estimates, the global population will approach 9 billion by the year 2054. Sixty percent of these people will reside in Asia, and Africa's present share of the total will have doubled to 20 percent by then. Europe, on the other hand, will contribute only 7 percent of the grand total, down to only one-third of its share during the heady days at the beginning of the twentieth century. Further, 46 percent of the world population is now urbanized, and by 2006, half of the world's people will live in cities. It is easy to jump to the conclusion, of course, that whatever the global future looks like will be determined mostly in Asia and Africa, and mostly in cities besides.[58]

These quantitative recitations can be impressive, seeming to convey unarguable facts. The possibility that all extrapolations should be regarded as educated guesses, hedged by technical nuance and sensible reservation by those who make them, is too often overlooked. In fact,

The Cartographic Satellite Atlas of the World, p. 22

Megalopolis: an infrared satellite shot of New York City

the most populous regions of the world have *not* inevitably been the most powerful regions of the world. At the turn of the nineteenth century, while Asia was still being divided up by colonial powers, Asia's share of the global population was roughly the same as projections for the year 2054.[59] It also does not follow from these projections that cities are inherently unstable, that they are hotbeds of unrest, or that in some way they contain clues to the future of humanity in general.

The largest cities of the world defy generalized predictions of disaster. Some of these cities would be considered successful by any standard of measurement. Some would be considered spectacularly unsuccessful but for their unaccountable attraction to more and more inhabitants each year. Somehow, people find reasons to live in these cities too. As a group, however, these cities lend credence to the urbanographer's rule that, however good or bad, cities tend to persist.

The ten largest cities of the world, by the UN's latest count, contain between them more than 162 million people and rank this way, their population given in millions:

Tokyo	28.8
Mexico City	17.8
Sao Paulo	17.5
Bombay (Mumbai)	17.4
New York	16.5
Shanghai	14.0
Los Angeles	13.0
Lagos	12.8
Calcutta	12.7
Buenos Aires	12.3[60]

If there is a discernible urban future, one might expect to see it here first, where success and failure are so highly magnified by scale and complexity. What is more certain is that these cities embody the urban present more comprehensively than any other collection, which is why these warrant a closer inspection.

One notices first that Europe is not represented at all. North America contributes two cities. East Asia and South Asia have two cities each, while Latin America takes the overall lead with three cities. Africa has only one entry, that of Lagos. Of course, it would be all too easy to overstate the significance of this scheme, but it does bear out other UN projections that show less-developed nations producing larger urban agglomerations. In 1960, the three largest cities in the world were New York, Tokyo, and London, in that order. Twenty-five years later, the rankings were Tokyo, then Mexico City, and finally Sao Paulo. By 2015, according to this estimate, the three largest cities will be Tokyo (with 28.9 million), Bombay (with 26.2 million), and Lagos (with 24.6 million).[61]

All but two of these cities are of colonial origin, and one of those, Shanghai, despite being over a thousand years old, became a multinational possession in the nineteenth century when several Western powers established themselves in the heart of the city. What one sees as the old core of Shanghai today, with its decidedly European architecture, dates from this period of colonial subjugation. Of all these cities, only Tokyo had no colonial past, and even this is open to debate if

one takes into account its occupation by the Allied powers following the Second World War.

All except one—Los Angeles—could be characterized as a premodern city; that is, the city dates its original configuration from before the advent of the industrial age. This is not mere historicism: cities whose core design was established before the introduction of the automobile, or even public transport systems, have been faced with herculean problems in adaptation. Los Angeles can be said to have escaped the worst of this challenge simply because, as late as the 1870s, it was still only a country village, with not quite six thousand inhabitants.

All but one of these giant cities is a port city or is one that has grown up in intimate relationship with a port, as in the cases of Tokyo and Yokohama, Sao Paulo and Santos. Only Mexico City is an inland city, beyond the sustenance of a seaport. Tokyo, New York City, Bombay, Calcutta, Shanghai and Lagos all have incorporated islands into their metropolitan areas. Tokyo continues, in effect, to create islands in its bay to accommodate growth in a highly constricted geographic zone. Bombay was originally settled upon a chain of seven islands. Lagos began its career on four islands in the Bight of Benin. Calcutta grew up in the Ganges estuary and has been unable to solve season flooding problems. Shanghai claims upwards of thirty islands within its metropolitan area.

Indeed, no city yet has grown so large that it can afford to dismiss the physical challenges of its locale. Three of these cities live under a real threat of earthquake—Tokyo, Los Angeles, and Mexico City. Tokyo suffered an earthquake in 1923; not even the Allied bombing campaign of early 1945 destroyed as much of the city and killed as many of its inhabitants. Mexico City's most recent earthquake, in 1985, killed several thousand people and injured thousands more. Los Angeles' Northridge earthquake of 1994 cost few lives but more money.

Even today, one can see how the original designs of these cities work upon the whole. Central Tokyo's radial organization dates from its premodern origins as a fortress town, and its later evolution as Japan's imperial city ensured the persistence of a central precinct where all roads converge. Major traffic arteries today obey the same scheme, and were Tokyo not supplemented by one of the most sophisticated public transportation systems in the world, the city would not move.

Mexico City, like Tokyo, owes its overall configuration to the surrounding topography. In Mexico City's case, the valley of Mexico

itself formed the original container, just as it had for the Aztecan capital on whose ruins it was built. Like any number of other colonial towns of Spanish or Portuguese origin, Mexico City's core is formed by a plaza that centralizes the functions of government, religion, and trade and around which one finds various neighborhoods organized by ethnicity, class, or occupation.

In some instances, such as that of Bombay, topography limits expansion. The original site of the city occupies an area of only twenty-six square miles and is effectively separated from the mainland by its harbor. In the modern city, the lack of space has encouraged the development of a vertical city after the fashion of Hong Kong and Singapore, cities that suffer the same problem. In these cases, the population density naturally increases, but what may be called the "functional density"—the concentration of sustaining goods and services—increases as well and produces even higher degrees of human, material, and organizational complexity. Towns and smaller cities naturally operate at a smaller pitch, a lower tempo, than larger places. The higher tempo of cities is possible because, over time, their populations have provided for it by creating these sustaining—and frequently interlocking—systems. A city's capacity to manage these systems is not won overnight. In effect, the systems grow as the city grows. Tokyo's subway system, for instance, could never have been built as a single piece; the system—and those who use it—had to grow together, so to speak. Tokyo's success might well be easier to understand than Calcutta's, with a population density of nearly 62,000 per square mile. But even as "one of the most ill-serviced and chaotic metropolises of the world," Calcutta continues to operate. By any standard, that cannot fail to impress.[62]

Modern global urbanism on this gigantic scale naturally poses the question of whether there is a finite limit of growth, whether there is some undiscovered critical point, beyond which a city's fundamental cohesion is endangered? But cities have been unsuccessful before and have been disappearing from the map since antiquity, not because of size or complexity or what might be supposed as inherent structural weaknesses, but because their context changed: a shrine moved, a water source dried up, a prince chose a different capital. Much more commonly, as one urbanographer has written, "cities in their physical aspect are stubbornly long-lived." It is much more likely that if there are limits to urbanism, they will be human, not artificial ones.[63] In that respect, the fundamental substance of cities is precisely that of war itself.

In the future, professional soldiers the world over will be more likely to find themselves operating—and sometimes fighting—in cities than in any other environment. The three wars fought by the United States since 1945 are the last gasps of a dying military tradition in which immense armies maneuver against one another over vast, unencumbering landscapes. A military future of the kind discussed here certainly does not correspond to the age-old self-image soldiers prefer to cultivate. Heroic charges are a bad idea when one is in contact with an enemy a few meters away in a darkened basement filled with concrete wreckage and noncombatants. But if armies do not shed themselves of their quickly obsolescing ways, there will be no shortage of "last stands."

No single moment in history was ever all new or all old. Looking backward, we can see that modern war began turning slowly toward urban operations again during the Second World War and that this trend has gained momentum ever since. Armies the world over have a wealth of their own experience to complement the great weight of historical knowledge. But experience is not the same as knowledge: the question to be answered now is what the armies have learned from their own experience and, better yet, as Bismarck would have said, the experience of others. The next part of this study addresses that question.

Notes

1. Military Operations in the Continental United States are not included in this working definition. Constitutional, political, and social questions require that these operations be considered separately from all other military operations.

2. See, for instance, US Army Science Board, *Final Report of the Army Science Board Ad Hoc Group of Military Operations in Built-Up Areas (MOBA)* (Washington, D. C.: Office of the Assistant Secretary of the Army [RDA], January 1979), which cites several of these concerns.

3. See Ralph Peters, "The Culture of Future Conflict," *Parameters* (Winter 1995): 18-27; Eliot A. Cohen, "A Revolution in Warfare," *Foreign Affairs* 75, no. 2 (March-April 1996): 37-54; and Edward N. Luttwak, "Toward Post-Heroic Warfare," *Foreign Affairs* 74, no. 3 (May-June 1995): 109-22. Lastly, see Ralph Peters, "The Future of Armored Warfare," and Paul Van Riper and Robert H. Scales, "Preparing for War in the 21st Century," *Parameters* 27, no. 3 (Autumn 1997): 50-59, 4-26. Indeed, most of the Autumn 1997 issue of *Parameters* may be said to be an exercise in this sort of pseudo-prognostication.

4. A view that may fairly be said to include that of the United States Marine Corps' doctrinal concept, "Urban Warrior." For a public view, comparing the Marines and the Army's work in this field, see Tom Ricks, "Urban Warfare: Where Innovation Hasn't Helped," *Wall Street Journal*, 12 October 1999, 10.

5. Including, most notably, John Keegan. See his "Please, Mr Blair, never take such a risk again," *London Daily Telegraph*, 6 June 1999 (see also http: www.telegraph.co.uk, Internet).

6. See, for instance, Major General Robert H. Scales, Jr., "The Indirect Approach: How U. S. Military Forces Can Avoid the Pitfalls of Future Urban Warfare," in *Future Warfare* (Carlisle Barracks, PA: U. S. Army War College, 1999), 173-85.

7. One might even add the "aerial environment" or the "maritime environment."

8. See Ulysses S. Grant, *Memoirs and Selected Letters* (New York: The Library of America, 1990), 292-304. As for the campaign of Cyrus, Paul Bentley Kern's *Ancient Siege Warfare* (London: Souvenir Press, 1999), 59, has an account taken chiefly from Herodotus.

9. Spiro Kostof, *The City Shaped: Urban Patterns and Meanings Through History* (London: Thames and Hudson, 1991; paperback 1999), 53. See also, Lewis Mumford, *The City in History* (New York: MFJ Books, 1961), 31.

10. See Mumford's comments on this dynamic equilibrium, which he views as a degenerative, not a regenerative process, in his *City in History*, 31.

11. The ancient and common custom of razing cities is discussed in Kern's *Ancient Siege Warfare*, 323-51.

12. While it is true that some cities had very warlike beginnings as military camps or fortresses, these places grew beyond their narrow original purpose or they did not survive for very long. Today, few cities would claim a singular purpose or would want to. Saudi Arabia's King Khalid Military City comes to mind, but it is more properly classed a military base. Elsewhere, military bases have taken on many of the characteristics of a small city, but these commonly depend for many of their functions on the communities that surround them.

13. Spiro Kostof, *The City Assembled: The Elements of Urban Form Throughout History* (Boston: Little Brown, 1999), 250.

14. See Gideon Sjoberg's classic, *The Preindustrial City: Past and Present* (New York: The Free Press, 1960), 33-64, for a survey of the archaeology of the earliest cities.

15. Kostof, *The City Shaped*, 37. See also Mumford, *City in History*, 235. As Kostof notes, no one now argues that the city had its origin in a single place, as scholars once believed.

16. Tertius Chandler and Gerald Fox, *3000 Years of Urban Growth,* with a foreword by Lewis Mumford (New York and London: Academic Press, 1974), 221, 363. See also, Kostof, *The City Shaped,*12-13.

17. Sjoberg, *The Preindustrial City,* 91-97; and Kostof, *The City Shaped,* 62-64, 106. A good deal of commentary on whether cities are ever "unplanned" seems to turn upon who does the planning. By adopting a presentist standard—that is, that nothing is planned unless a city planning commission does it—urbanographer Howard J. Nelson is able to characterize Los Angeles' growth from 1900 to 1990 as "mostly unplanned." See his essay on "Los Angeles," in *Microsoft Encarta Encyclopedia 99,*CD-ROM.

18. Kostof, *The City Shaped,* 62-64.

19. Tercius Chander and Gerald Fox, *3000 Years of Urban Growth* (New York and London: Academic Press, 1974), 79-82, 291. See also, Sjoberg, *The Preindustrial City,* 91-98.

20. Mumford, *The City in History,* 31.

21. Chandler and Fox, *3000 Years,* 226.

22. Sir Peter Hall, *Cities in Civilization* (New York: Pantheon, 1998), 38.

23. Virtually every modern urbanographer finds a way to quote Aristotle's remark. See Mumford, *City in History,* 111.

24. Hall, *Cities in Civilization,* 624-25.

25. Kostof, *The City Assembled,* 25.

26. Sir Peter Hall, *Cities in Civilization,* 621. Inevitably, there is disagreement about the precise time Rome achieved the one million mark. The figures given here represent a compromise between extremes of date and number. All sources agree that Rome was bigger than any other city, so much bigger that it constituted a real anomaly in the ancient urban world. Kostof, *The City Shaped,* 37. See also, Mumford, *City in History,* 235.

27. Mumford, *City in History,* 235.

28. Hall, *Cities in Civilization*, 621-27.

29. Ibid., 611.

30. Fernand Braudel, *The Structures of Everyday Life,* volume 1, *Civilization and Capitalism, 15th to the 18th Century,* trans. by Sian Reynolds (New York: Harper and Row, 1981), 481. See also, Kostof, *The City Shaped*, 37, who argues flatly that "cities come in clusters."

31. Hall, *Cities in Civilization*, 649.

32. Chang' an, in China, may have reached the million mark by the eighth century. Baghdad may have had a million inhabitants when the Mongols sacked it in 1258. Beijing was probably the largest city in the world when London passed it in the nineteenth century. Kostof, *The City Shaped,* 37. See also, Mumford, *City in History,* 235.

33. At the same time, Europe contributed only 21 percent of the total, Africa 13 percent. After 150 years, Europe's contribution to the total had risen to 25 percent, while Asia's share had dropped to 57 percent, and Africa's only 8 percent. United Nations, "The World at Six Billion" (New York: United Nations Population Division, Department of Economic and Social Affairs, 12 October 1999), available also at Internet.

34. Kostof, *The City Shaped,* 108-10.

35. Ibid.

36. Until 1900, the rate of world population growth remained at about .0002 percent per annum, or roughly twenty million people a year. The Population Council, "Population," *Microsoft Encarta Encyclopedia 99*, p. 4, CD-ROM.

37. Mumford, *City in History*, 529.

38. David Crystal, ed., *The Cambridge Factfinder,* 3d edition (Cambridge: Cambridge University Press, 1998), 201.

39. Hall, *Cities in Civilization*, 618.

40. Sjoberg, *The Preindustrial City,* 106. "The wheels must turn at just the right moment," Sjoberg writes.

41. Kostof, *The City Assembled,* 59; Hall, *Cities in Civilization,* 612.

42. A fair example, now generally recognized as such, is Lewis Mumford's major work, *The City in History,* which, though path breaking in many respects, suffered in general from an apocalyptic view of cities as the chief mechanisms of a civilization's death. His concept of the "Necropolis," detailed on page 242, was particularly appealing to those who shared his prejudices.

43. These are the criticisms of Adna Ferrin Weber, first detailed in Weber's classic, *The Growth of Cities in the Nineteenth Century* (New York: Macmillan, 1899), reproduced in Don Martindale, "Prefatory Remarks: The Theory of the City," in Max Weber, *The City,* trans. by Don Martindale and Gertrud Neuwirth (Glencoe, Illinois: The Free Press, 1958), 17.

44. Hall, *Cities in Civilization*, 648, 658, 684, 695, 701.

45. David P. Jordan, *Transforming Paris: The Life and Labors of Baron Haussmann* (Chicago: University of Chicago Press, 1995),93-96.

46. Hall, *Cities in Civilization,* 709, 753.

47. William C. Graeub, "Public Transportation," *Microsoft Encarta Encyclopedia 99,* CD-ROM.

48. Kostof, *The City Assembled*, 50-61. There is more than a hint of resentment by urbanographers and historians toward the advent of transportation as not only an important factor in city planning and sustainment but as a transcendent factor—a factor bearing such weight upon the whole subject that urban planning has been subordinated to traffic management and little else.

49. Masonry foundations could bear relatively little weight for instance, and framing materials before the use of iron and steel left much to be desired.

50. Hall, *Cities in Civilization*, 770-78.

51. Mumford, *City in History*, 391.

52. Hall, *Cities in Civilization*, 804.

53. Ibid., 806, 815.

54. A point made by Spiro Kostof in *The City Shaped*, 69, as well as by Robert Fishman in his *Bourgeois Utopias: The Rise and Fall of Suburbia* (New York: Basic Books, 1987), 185, among others.

55. Kenneth T. Jackson, "America's Rush to Suburbia," *The New York Times,* 9 June 1996, quoted in Robert Kaplan, *An Empire Wilderness: Travels into America's Future* (New York: Random House, 1999), 23.

56. Kaplan, *An Empire Wilderness,* 23. It is quite amazing to see suggested in a leading professional military journal, for instance, that cities could "secede" from their countries or that suburbs could "secede" from their cities; this sort of prognostication betrays a fundamental misunderstanding of urban history and development.

57. Robert B. Kent, "Rio de Janeiro," *Microsoft Encarta Encyclopedia 99,* CD-ROM.

58. United Nations, "The World at Six Billion" (New York: United Nations Population Division of the Department of Economic and Social Affairs, 1999), b-2, b-3; available at <http://www.un.org/popin> (retrieved 1999).

59. One need only remember the West's reaction to the Japanese economic miracle of the late 1980s and early 1990s: it seemed inevitable that the Japanese economy would prosper forever and mainly at the expense of Western economies. Western experts were dispatched, books were written, movies were even made. All purported to explain the mysteries of Japanese culture and

behavior in order to understand the keys to Japanese success. But Japan's recession immediately thereafter spoiled all the predictions. History intervened. See, for example, Jonathon Rauch, *The Outnation: A Search for the Soul of Japan* (Boston: Little Brown, 1992); James Fallows, *Looking at the Sun: The Rise of the Near East Asian Economic and Political System* (New York: Vintage Books, 1994); Michael Crichton, *Rising Sun* (New York: Ballantine Books, 1992), which spawned a successful motion picture; Ian Buruma, *Behind the Mask* (New York: Ballantine Books, 1984), very likely the best of contemporary western social analyses; and, for a convenient summary, Walter LaFeber, *The Clash: U. S-Japanese Relations Throughout History* (New York: W. W. Norton, 1997), 357-405.

60. UN, "The World at Six Billion," p. t31. htm. (See note 33).

61. UN, *World Urbanization Prospects: The 1996 Revision*, 1997 <www.prb.org/pubs, notebook/slide 18.jpg> (retrieved 1999).

62. Ashok K. Dutt, "Calcutta," *Microsoft Encarta Encyclopedia 99*, pp. 5, 8, CD-ROM.

63. Kostof, *The City Shaped*, 30.

Official photo courtesy Dr. Richard Swain

A culmination point in Sarajevo