



The Invention of the City

Early cities worldwide followed remarkably similar patterns.

Katharine Menke (1888–1945) and Leonard Woolley (1880–1960) led the kinds of lives that archaeologists only have in novels. They were both educated at the University of Oxford in the early 1900s, and Leonard Woolley went on to conduct excavations in Egypt, Nubia, and Syria. With T. E. Lawrence (1888–1935), he excavated the Hittite site of Carchemish in Syria. Covertly on behalf of British Intelligence, he and Lawrence were also monitoring Germany’s progress on a train line from Berlin to Baghdad. In World War I, the ship on which Woolley served was captured in the eastern Mediterranean, and he spent two years in a Turkish prisoner-of-war camp, adding the Turkish language to the Arabic, French, German, and Italian he already knew. Katharine Menke was equally adventurous. Her first husband, Bertram Keeling (1880–1919), was director-general of Britain’s Survey of Egypt. Only six months

after they wed, he died by suicide at the base of the Great Pyramid of Giza in 1919. Menke continued to work in archaeology and joined Woolley at the Sumerian site of Ur in 1924. The two married in 1927.

Ur is one of the first known cities. In 2900 BCE, it was capital of southern Sumeria and for a time was the largest and most important of the Sumerian cities. As one of the earliest urban centers, Ur had some of the characteristics that came to be nearly universal among early cities, especially after people had lived in them for a while and found solutions to some of their problems. Among the extraordinary things Leonard and Katharine Woolley excavated at Ur were the royal tombs from the First Dynasty, dating to about 2600 BCE. One of the most impressive tombs was of a person identified on carved cylinder seals as Queen Puabi. In an

enormous “death pit,” she was buried in her gold and finery, surrounded by more than sixty bodies—people who had been killed and buried with her, including attending women, soldiers, musicians (with their instruments), and chariots pulled by four horses. Her crown, or headdress, contains gold, silver, lapis lazuli, pink stone, and red carnelian beads from the Indus valley of Pakistan, over 2,000 kilometers (km) away. Tombs such as this, full of rich and exotic goods with dozens of people buried with the principal occupant, are a phenomenon related to some of the early cities and state societies. They are found nearly everywhere complex state societies developed, from Europe to China and Africa and throughout the Americas.

And the layout of early Mesopotamian cities was similar to early cities everywhere. Mature urban centers were usually oriented on a north-south/east-west grid, were usually walled, and almost always had central marketplaces. They always had civic/ceremonial areas near the center, with palaces, religious structures, government buildings, and open plazas where large crowds could



Aerial view of modern Naples, Italy

gather. Sometimes there were sporting facilities, such as the Mesoamerican ball courts (see “*Field Notes: Highland Ballgames in Early Mesoamerica*” by Jeffrey Blomster and Victor Salazar Chávez, *Natural History*, June 2020), the Roman Coliseum, or race tracks (circuses), or the large sports stadiums of modern cities.

Cities had several obvious advantages: People could gather together for common defense within city walls; commercial activity and trade could be centralized; craftspeople could specialize on specific products, some making only pottery or tiles, others fashioning metal tools and weapons, and others weaving cloth or working with leather. This mercantile class of specialists was not possible in smaller villages, and cities had room for all kinds of niche experts, including all the manufacturing trades as well as professional soldiers, bureaucrats, scribes, educators, and religious specialists (priests or their equivalent).

Early cities around the world also faced the same set of problems and

often dealt with them in similar ways. Gathering together around 100,000 people in a confined space meant finding ways to move adequate food and water into the city. It meant developing a system for keeping the peace and settling disputes, and it meant dealing with sewage and garbage. The quantity of sewage produced daily by 100,000 people is over 50,000 kilograms. At Ur, the Woolleys discovered under palaces great sewage pits, buttressed with nesting ceramic rings and dug to a depth of about four meters. The pits didn’t connect to any larger sewage system; the contents just leached into the soil. Most

people, however, lived in densely occupied residential areas; they emptied their chamber pots into pit toilets or open ditches.

Rome’s large textual record offers insight into life in a crowded, walled city. During its imperial period (27 BCE–476 CE) there were ap-

proximately 800,000 people living in Rome, attaining very high population densities within the city walls. A person of average income would have lived in an *insula*, or apartment building. In Rome, these were brick and timber structures three to five stories tall. Some were even taller and their size had to be regulated by the state. Emperor Augustus (63 BCE–14 CE) limited the height of *insulae* to about sixty-eight feet in the last century BCE, and heights were reduced again after the Great Fire in Rome in 64 CE. These apartment buildings were often constructed around an open atrium or a long central hallway. The first story might contain shops or commercial businesses, with the apartments above. A few pit latrines (often just one per apartment building) were located on the outside of the building, and nearly everyone used chamber pots.

The satirical poet Juvenal (ca. 55–ca. 127 CE) described living in one: “We live in a city where most of the buildings are held up by flimsy bits of wood; that’s how the owner stops his flats falling down; he patches up an old crack, then tells us to sleep soundly in a ruin that’s about to collapse.” Even the philosopher and statesman Cicero (106–46 BCE) was a slumlord.



Katharine and Leonard Woolley examining ceramic-lined septic pits beneath a palace at Ur.

He wrote to a friend, “...two of my shops have fallen down and the rest are cracking. Not only the tenants but the very mice have moved out.”

Rome’s chaotic layout—having grown without much planning in a hilly terrain—was the exception. Many other cities were carefully planned from the start. In China, cities were sited and oriented according to principles of *feng shui*, which kept individuals, rulers, city, state, and the cosmos in harmony.

The city plan established the proper orientations and proportions of these things, according to ancient Chinese tradition, embodying a cosmological map with the emperor at its center. Some of these architectural principles were recorded in the *Kao Gong Ji*, or *Artificers Record*, a Chinese text begun around the fifth century BCE. It is a compendium of instructions for how to build things: chariots, bronze bells, archer’s bows, and pottery, among others. It also has a section explaining how to plan a city. To paraphrase the instructions: For cities of any size, you start with a north-south orientation, and lay its subunits organized on a grid of sixteen sections, with a palace at the center. Each side will have three gates, twelve in all. Three main longitudinal and three main transverse streets are marked out. Each street, which has three lanes, is nine chariot-gauges wide. For capitals, the royal palace is at the center, flanked by the temple of the ancestors, and the altar of the gods of the land and grain. The law courts are in the front, and in the rear are marketplaces.

Chang’an (Xi’an), the massive capital of the Han Dynasty, was such a city. It was begun around 200 BCE by Liu Bang (256–195 BCE), the first emperor of the dynasty. Its excessive size was intended as a dis-

play of power. The city was organized as a square, more than five km on a side, surrounded by a huge rammed earth wall and moat, and encompassed around thirty square km. The imperial palace was centered on Chang’an’s EW grid, with major thoroughfares going south, east, and west to each wall’s main gate. The city had two great markets and dozens of smaller markets among its 108 residential districts, or *li*, each housing about 10,000 people.

tems were routed from the Wei River through the city, providing another outlet for sewage as well as a water supply. Drinking water came from the river or wells and both sources had some level of contamination. Most residential units also kept livestock, especially pigs. While they helped with provisioning and garbage, they contributed to the problems of sewage and disease transmission. As with all early cities, because of city-bred diseases and contaminated water supplies, life expectancy was almost always lower in the city than in the countryside.



Urban residential areas, clockwise from upper left: Mesopotamian city of Ur (ca. 2200 BCE), Mesoamerican city of Teotihuacán (ca. 500 CE), Indus Valley city of Mohenjo Daro (ca. 2000 BCE), Roman city of Ostia (ca. 200 CE).

Each *li* was surrounded by walls three meters high with entrances that were locked every night for protection and to control the population. At its height, around 750 CE, Chang’an purportedly had one million inhabitants.

The palaces in Chang’an had sewer systems with buried ceramic pipes, but most people emptied their chamber pots into the open trenches that ran along the main and secondary streets. These channels eventually made their way under the city walls and into the moat/cesspool that surrounded the city. Several stream sys-

More than 13,000 km from Chang’an and several hundred years later, another ancient city began a parallel path of development—Teotihuacán, in the basin of Mexico. From above, it looked a great deal like all other ancient cities, with a grid system of main and secondary roads, residential neighborhoods, or *barrios*, a civic/ceremonial core, multiple markets, bureaucratic buildings, palaces, and so on. As with Chang’an, Teotihuacán re-routed rivers to follow its grid system and carry water and sewage.

Its distinct residential barrios were parallel to the Chinese city’s *li*, separated from one another by secondary streets. These residential divisions also paralleled ethnic divisions, as the metropolitan center brought in craftsmen and merchants from throughout the geopolitical state. In Teotihuacán, several such areas were linked by their material culture to Oaxaca, Puebla, and other areas.

In the larger story of our species, the similarity in cities is profound. The people of the Americas were separated from those in China,



Civic/ceremonial center of Teotihuacán, near Mexico City.

Mesopotamia, Africa, and Europe by more than 10,000 years of independent development. Before the great scattering of *homo sapiens* around the world, the largest human group anywhere was probably a band no greater than 100 people. Yet the cities they built ten millennia later look and work the same way, down to the layout of streets and locations of markets. In Kyoto, Japan’s capital for 1,000 years, the imperial palace is at the heart of the city grid. In the Aztec capital of Tenochtitlán, the roads converge on the Templo Mayor complex, now at the center of Mexico City alongside the Metropolitan Cathedral. At Teotihuacán, the Temple of the Feathered Serpent is located where the north-south and east-west axes cross. In the well-planned Roman city of Timgad in Algeria, the forum lies at the center of its perfect grid. And in medieval Paris, the central Île de la Cité has Notre Dame Cathedral and the royal palace.

When Hernán Cortés (1485–1547) and his men marched into Tenochtitlán (a much smaller place than Teo-

tihuacán, which had been abandoned around 650 CE), they marveled at “the great towers and temples and buildings rising from the water, and all built of masonry.” Cortés described “four avenues or entrances to the city, all of which are formed by artificial causeways, two spears’ length in width. The city is as large as Seville or Córdoba; its streets ... are very wide and straight.” He described the market as “a square twice as large as that of the city of Salamanca, surrounded by open buildings, where are daily assembled more than sixty thousand souls, engaged in buying, and selling; and where are found all kinds of merchandise that the world affords, embracing the necessities of life, as for instance articles of food, as well as jewels of gold and silver, lead, brass, copper, tin, precious stones, bones, shells, snails, and feathers.”

The great Sumerian city of Ur that Katharine and Leonard Woolley excavated is separated from Tenochtitlán by time and distance, yet both are manifestations of a particu-

larly human way of living. Cities now house about 56 percent of the world’s population. Why we build cities in such similar ways, across time and space, is something anthropologists and historians have not adequately explained. Part of the reason may be that there are efficiencies in carving up space into certain configurations, such as grids, and only so many ways to pack residences into small spaces, but the social similarities are harder to explain. Cities, old and new, have proven to be remarkably scalable in fractal-like ways, with families nesting into larger residential kin groups, kin groups into larger neighborhoods like mini-villages, and these village/neighborhoods into expandable cities, their size limited only by their ability to bring food in from the hinterland. Since the days of Ur, we have become an ever more urban species.

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