

BOX 3.2

Pre-conditions for pre-industrial urban growth

Population

The presence of a population of certain size residing permanently in one place is a fundamental requirement. The environment, level of technology and social organisation all set limits on how large such a population would grow. Particularly important was the extent to which the agricultural base created a food surplus to sustain an urban population. The earliest cities were relatively small in modern terms, with few exceeding 25,000 inhabitants.

Environment

The key influence of the environment, including topography, climate, social conditions and natural resources on early urban growth is illustrated by the location of the earliest Middle Eastern cities on the Rivers Tigris and Euphrates, which provided a water supply, fish and fertile soils that could be cultivated with simple technology.

Technology

In addition to the development of agricultural skills, a major challenge for the early urban societies of the Middle East was to develop a technology for river management to exploit the benefits of water and minimise the risk of flooding.

Social organisation

The growth of population and trade demanded a more complex organisational structure including a political, economic and social infrastructure, a bureaucracy and leadership, accompanied by social stratification.

**Source: Adapted from O.Duncan (1961) From social system to ecosystem
Sociological Inquiry 31, 140-9**

THEORIES OF URBAN ORIGINS

HYDRAULIC THEORY

The importance of irrigation for urban development, especially in the semi-arid climates of the Middle East where the **agricultural revolution** took place, was identified by Wittfogel (1957),⁴ who argued that the need for large-scale water management required centralised co-ordination and direction, which in turn required concentrated settlement. The principal characteristics of a 'hydraulic society' are that it:

1. permits an intensification of agriculture;
2. involves a particular **division of labour**;
3. necessitates co-operation on a large scale.

As Box 3.2 indicates, these are reflected in Duncan's (1961) preconditions for urban growth. Agricultural intensification allows a concentration of population, while co-operation leads to a need for managers and bureaucrats. Those who control the water resources (whether a temple elite or secular state) exert power over others (e.g. farmers). The division of labour, centralisation of power and administrative structure all promote concentrated settlement, and hence the emergence of a town. As well as in the Middle East, evidence of a relationship between the adoption of irrigation and rapid population growth, nucleation, monument construction, intense social stratification and expansionist warfare has also been found at Teotihuacán in Mexico, which was the site of a pre-industrial city of 70,000-125,000 inhabitants.

There is now little doubt that irrigation was a key factor in the growth of pre-industrial cities in the ancient world. The problem lies in disentangling cause and effect. This is particularly difficult if one is seeking to support the belief that urbanisation *followed upon* the development of irrigation. A more likely scenario is that the institutions of centralised urban government and large-scale irrigation grew side by side. At first, small-scale irrigation schemes would have required a certain amount of administration, which would have expanded the irrigation system. This in turn would have required greater administration and so on, eventually leading to large-scale irrigation works and an urban political organisation with a monopoly of power.

ECONOMIC THEORY

Several theorists have suggested that the development of complex large-scale trading networks stimulated the growth of urban society.⁵ Certainly, the fact that southern Mesopotamia did not have many raw materials such as metallic ores, timber, building stone or stone for tools made trade essential. This required an administrative organisation to control the procurement, production and distribution of goods. Such an organisation would have been a powerful agent in the community, and its power may well have extended beyond trade into other aspects of society. The need to increase production for trade purposes as well as to feed an expanding population would have led to continued specialisation and intensification, and the growing sedentary population would itself constitute a market for local produce and trade goods. Once again, however, it is unclear whether trade was a cause of city growth or the product of an already existing urban administrative elite.

MILITARY THEORIES

Some theorists suggest that the origin of cities lay in the need for people to gather together for protection against an external threat, the initial agglomeration leading to subsequent urban expansion. The excavation of a massive defensive wall built on bedrock would appear to indicate the defensive origins of Jericho, but not all early towns have such defences. Wheatley (1971)⁶ believed that warfare may have contributed to the *intensification* of urban development in some places by inducing a concentration of population for defensive purposes and by stimulating craft specialisation.

RELIGIOUS THEORIES

Religious theories focus on the importance of a well-developed power structure for the formation and perpetuation of urban places and, in particular, how power was appropriated into the hands of a religious elite who controlled the disposal of surplus produce provided as offerings.⁷ There is clear evidence of shrines and temples in ancient urban sites and there can be little doubt that religion played a significant part in the process of social transformation that created cities. However, it is unlikely to have been the sole factor.

THEORETICAL CONSENSUS?

It is doubtful if a single autonomous, causative factor will ever be identified in the nexus of social, economic and political transformations that resulted in the emergence of urban forms of living. A more realistic interpretation is generated if the concept of an 'urban revolution' is replaced by the idea of an *urban transformation* involving a host of factors operating over a long period of time. As Redman (1978 p. 229)⁸ explained:

urbanisation was not a linear arrangement in which one factor caused a change in a second factor, which then caused a change in a third, and so on. Rather, the rise of civilisation should be conceptualised as a series of interacting incremental processes that were triggered by favourable ecological and cultural conditions and that continued to develop through mutually reinforcing interactions.

This approach represents a significant departure from monocausal views on the origin of cities. Its value lies in exposing the key roles of social stratification and individual and group decision-making underlying the complex reality of the transformation from nomadic life to settled urban life in the ancient world. For urban geographers, this poses the particular question of *where* such developments occurred.

EARLY URBAN HEARTHS

As Figure 3.1 illustrates, there is evidence of early city growth in four areas of the Old World and one area of the New World:

1. *Mesopotamia*. The first cities are thought to have begun around 3500BC in lower Mesopotamia (Sumer) around the Tigris and Euphrates

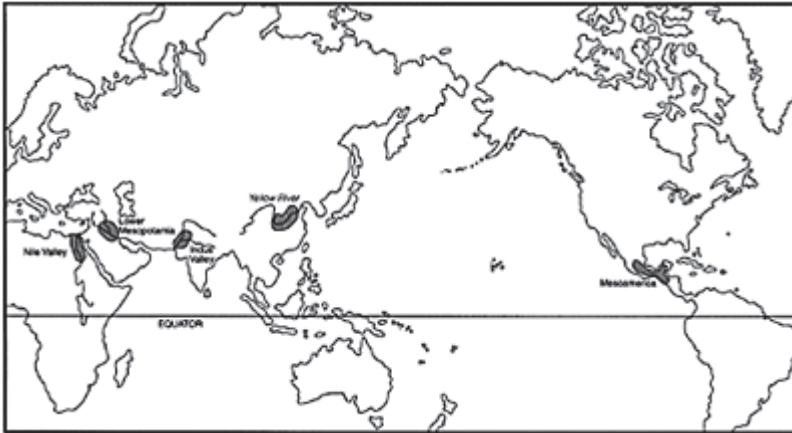


Figure 3.1 Early urban hearths

ivers (Figure 3.2). One of the earliest cities was Ur, which from 2300 BC to 2180BC was the capital city of the Sumerian Empire, which extended north along the Fertile Crescent, possibly as far as the Mediterranean. In 1885BC Ur and the other southern cities were conquered by the Babylonians⁹ (Box 3.3).

2. *Egypt*. There is a long-standing debate in archaeology over theories of urban diffusion or independent invention but it is most probable that agricultural and other technologies, possibly including city-building, spread along the Fertile Crescent, then south-west into the Nile valley. By 3500BC a number of the Neolithic farm hamlets along the lower Nile had risen to 'overgrown village' status and were clustered into several politically independent units, each containing large co-operative irrigation projects. The transition from settled agricultural communities to cities occurred around 3300 BC when the lower Nile was unified under the first pharaoh, Menes.

The early Egyptian cities were not as large or as densely settled as those of Mesopotamia because:

- The early dynastic practice of changing the site of the capital, normally the largest settlement, with the ascendancy of a new pharaoh limited the growth opportunity of any single city.
- The security provided by extensive desert on both sides of the Nile meant that once the valley was unified politically, Egyptian cities, unlike those of Mesopotamia, did not require elaborate fortifications and garrisoned troops for protection.

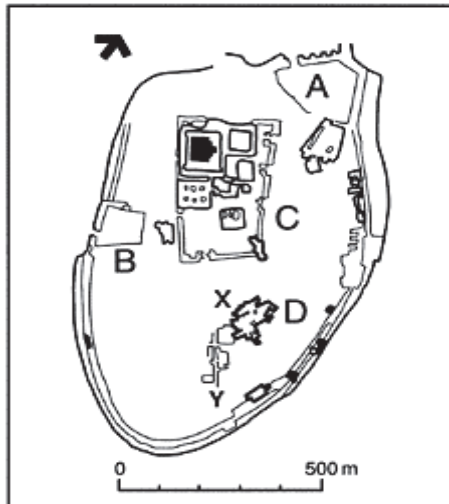


Figure 3.2 The Fertile Crescent and ancient cities of the Middle East

BOX 3.3

Ur of the Chaldees

The city of 2000BC was surrounded by a wall 26ft (8m) in height which enclosed an area of 89 acres (36 ha) and a maximum population of 35,000. The walled city was an irregular oval shape, about three-quarters of a mile (1.2km) long by half a mile (0.8km) wide. It stood on a mound formed by the ruins of previous buildings, with the River Euphrates flowing along the western side and a navigable canal to the north and east.



The harbours to the north and west provided protected anchorages (A and B in the plan). The *temenos* or religious precinct occupied much of the north western quarter of

the city (C in the plan). The remainder of the city within the walls was densely built up as residential quarters (D in the plan), with two-storey houses of burnt brick below and mud brick above, with plaster and whitewash concealing the change in material. House size and ground plan varied according to the space available and the owner's means, but generally rooms were arranged around a central paved courtyard that gave light and air to the house. A processional avenue (X-Y in the plan) possibly ran straight through to the *temenos*. Including those resident outside the walls, a figure of 250,000 has been estimated for the total population of the city-state.

Source: A.Morris (1994) *History of Urban Form* Harlow: Longman



Plate 3.1 The pyramid at Chichen Itza in Mexico functioned as a solar calendar for the Mayan civilisation that flourished in Meso-America and the Yucatan between 300 BC and AD 1300

3. *The Indus valley.* The Harappa civilisation appeared around 2500 BC in the Indus valley in what is now Pakistan. It was distinguished by twin capital cities, a northern one of Harappa in the Punjab and Mohenjo-daro, 350 miles down-river. The planned layout of each city was in marked contrast to the organic growth of Mesopotamian cities such as Ur. Both cities were laid out on a gridiron pattern with wide, straight streets forming 1,200 ft×800 ft (370 m×240 m) rectangular blocks. Socio-spatial segregation was common, with blocks or precincts occupied by a specific group such as potters, weavers, metalworkers and the elite. Each city covered approximately one square mile in area (640 acres/250 ha) and accommodated 20,000 people.

The Harappa kingdom was ruled from the twin capitals by a single 'priest-king' who wielded absolute power. There is some evidence of trade with the Sumerian city-states by 2000 BC but the unchanging material culture and still undeciphered written language suggests that, in contrast to the cities of the Nile valley, the Harappa culture and cities emerged independently. Following a thousand years of stability, the Harappa civilisation was destroyed by invaders around 1500BC.

4. *The Yellow River*. The valley of the Huangho (Yellow River) was the birthplace of the Shang civilisation that arose around 1800BC. The most significant feature is that individual cities, such as An-Yang, were linked into a network of agricultural villages; a town wall did not separate an urban **subculture** from a rural one.¹⁰ This form of 'urban region' is without precedent in the early civilisations of Mesopotamia, the Nile and the Indus.
5. *Mesoamerica*. The earliest cities in the New World appeared around 200 BC—in southern Mexico (Yucatan), Guatemala, Belize and Honduras. Thus Mesoamerican peoples were entering a stage of development equivalent to the Neolithic of the Old World at a time when Mesopotamian cities had been in existence for 2,000 years. Of the several civilisations that evolved in Mesoamerica, the Mayan, which flourished between AD 300 and AD 1000, was the most culturally advanced. Cities such as Tikal, Vaxactum and Mayapán were centres of small states ruled by a leader drawn from a priest-hood and organised into a loose confederation. Society was highly stratified, with the elite occupying central city land around the palaces and temples, and the lower classes the urban periphery.

Although the debate over urban diffusion or independent origin remains unresolved, identification of a number of common features among early urban societies encouraged Sjoberg (1960) to propose a model of the socio-spatial structure of the pre-industrial city¹¹ (Box 3.4).

THE SPREAD OF URBANISM

By 800 BC cities such as Athens, Sparta and Megara had arisen on the Greek mainland. Greek cities subsequently spread to other parts of the Mediterranean and along the Black Sea coast. The Greek urban diaspora was a direct response to population pressure and the poor agricultural base available to the mainland cities. Individual cities equipped expeditions to establish new cities. A first wave beginning around 750 BC led to settlements on the coast of the Ionian Sea, in Sicily and in southern Italy (e.g. Ephesus, Syracuse and Naples), with a second wave spreading east to reach the Black Sea by 650BC. A significant feature of Greek urban colonisation was that in contrast to the organic layout of mainland cities like Athens, the new independent cities frequently adopted a gridiron plan, irrespective of the topography of a site.

The expansion of the Roman Empire, following the defeat of Carthage in the Punic Wars (264–146 BC), carried the practice of city-building, and in particular the gridiron plan, into Western Europe. In Britain, prior to the Roman conquest in 55 BC, systematic town-planning was unknown. Figure 3.3 shows the typical form of a Roman imperial urban settlement. The town perimeter was usually square or rectangular. Within it there were two main cross-streets, the east-west *decumanus* through the centre of the town, and