Books & arts

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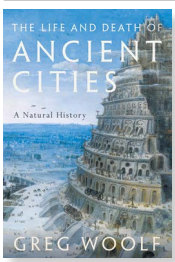
The great bath at Mohenjo-daro, a city of the Indus civilization built around 2500 BC in what is now Pakistan.

How did ancient cities weather crises?

As the current pandemic makes us ponder the future of cities, a book examines past rises and falls. **By Andrew Robinson**

For millennia, cities have generated power, wealth, creativity, knowledge and magnificent buildings. They have also incubated hunger, violence, war, inequality and disease — as we've so painfully experienced this year. The coronavirus pandemic has shaken our faith in urban life, as lockdowns have emptied streets that are home to more than half the world's population. Basic supply networks have been revealed as fragile, and the densely packed social groups that are engines of income, support and enjoyment have become a source of peril.

As the pandemic forces us to contemplate the future of cities — three-quarters of the world's people could live in urban areas by 2100 — historian Greg Woolf examines their past. His latest book is a deeply researched and ambitious "natural history" of the origins and growth of urbanism. Woolf is an expert on ancient Rome, the city with the highest population in antiquity — at its peak around 2,000 years ago, a mind-boggling one million people lived there, some 0.3% of the global population. That was in the reign of the emperor Augustus (27 BC to AD 14).



The Life and Death of Ancient Cities: A Natural History
Greg Woolf
Oxford Univ. Press (2020)

The Life and Death of Ancient Cities spans from the Bronze Age, starting in the fourth millennium BC, to the early part of the Middle Ages, in the first millennium AD. It focuses on the hundreds of ancient Mediterranean cities that sprang up during this time, including Alexandria, Antioch, Athens, Byzantium and Carthage, as well as Rome. Woolf synthesizes intriguing insights from the humanities, social

sciences, climatology, geology and biology. He explains that the neoclassical buildings of modern cities, such as London's British Museum, give a false impression. The famous centres of antiquity were "far less grandiose" – Athenian assemblies, for example, debated in the open air. He wryly notes that rats and humans thrive in cities, because both can survive on diverse food sources and cope with prolonged periods of hunger.

When did cities first appear? The answer depends on definitions. In today's Nicaragua, notes Woolf, any settlement with street lights and electricity counts as a city. In Japan, a population greater than 50,000 is required. A prime candidate for the world's first city is perhaps Jericho in what is now the Palestinian territories. It was founded before 9000 BC and about a millennium later had a wall – the earliest such barrier discovered. But Jericho's population at the time is uncertain. Estimates range from a few hundred to 2,000 or 3,000. As Woolf observes, it is tricky to determine population size in early societies without written records. One option is to analyse the water supply to work out how many people it could have served, but this reveals maximum carrying capacity rather than use, and struggles to take into account public baths and fountains.

Like most specialists, Woolf prefers to give the title of first city to Uruk, in Mesopotamia. This settlement had an estimated 10,000–20,000 inhabitants in 4000 BC, rising to between 60,000 and 140,000 after a massive protective wall, ascribed to King Gilgamesh, was built around 2900 BC. Here, in the late fourth millennium BC, writing probably originated in the form of cuneiform script on clay tablets, used to record bureaucratic information such as economic transactions. One such tablet displays the world's oldest known mathematical calculation, of the surface area of a roughly rectangular field. Yet the factors that drove the creative outburst that built the city remain mysterious. As Woolf admits: "For all the attention that has been devoted to the Uruk phenomenon, there is still no consensus about why it happened."

Mediterranean metropolises

Cities arrived much later in the ancient Mediterranean. Athens became an important centre of the Mycenaean civilization around 1400 BC; Rome was founded in the eighth century BC; Alexandria dates from 332 BC. Mediterranean farmers generally lacked access to the flood water and fertile alluvial mud provided by Mesopotamia's great rivers, the Tigris and Euphrates. For centuries, people lived in villages and hamlets rather than cities, which are at risk from crop failures and water shortages. Again, the driving forces are often debatable. The chief period of Roman urbanization is now known to have coincided with a period of increased temperatures during the last century BC and first two centuries AD. But, as Woolf warns, this might be a coincidence: "It is perfectly possible to explain urbanization without recourse to climate change."

Another source of uncertainty is how ancient diseases affected urban centres. Written accounts suggest, for example, that the Antonine plague claimed at least five million lives in the Roman Empire in AD 165–180, spreading so fast that an emperor and his entourage tried to outrun it on horseback. Yet its cause remains undetermined. Fast-developing techniques of ancient DNA analysis promise a more precise picture, notes Woolf. A crucial question is whether particular ancient epidemics affected city-dwellers more severely than their rural neighbours.

"No city lasts forever, however solidly founded."

One thing is clear: no city lasts forever, however solidly founded. This is Woolf's key point, backed up with four striking examples. In the northwest of the Indian subcontinent, the Indus civilization flourished in the third millennium BC, with remarkable cities at Harappa and Mohenjo-daro that featured brick houses, advanced drainage and a large public bath. Around 1900 BC, the civilization mysteriously disappeared. In the eastern Mediterranean, Bronze Age civilizations suffered an unexplained collapse around 1200 BC, followed by a centuries-long dark age during which the poet Homer recalled the legendary magnificence of cities such as Knossos and Troy.

Rome's population plummeted to perhaps 10,000 after the fall of the Roman Empire in the fifth century. And in Britain, Roman London had become prominent in the first century because of its maritime connections, with a forum, amphitheatre and walls. It withered after the Romans left but was revived under the Anglo-Norman state, becoming a centre of government in the thirteenth century.

The rise of cities might look inexorable, but urbanization has retreated as well as advanced over the millennia. "If we are urban apes it is not because we were ever designed to live in cities," Woolf emphasizes. Indeed, cities have existed during a mere 3% of the estimated 300,000-year existence of our species.

As we struggle to adapt to the latest pandemic, it might be some comfort that ancient plagues don't seem to have killed off any major cities. But in his final pages, Woolf – writing before the coronavirus outbreak – implies that pandemics might slow their future growth. There is "absolutely no guarantee" that our current rate of globalization will continue until we are "uniformly urbanized", he writes. "If the study of ancient cities teaches us anything it is that there have been many urban moments, but few that lasted more than a few centuries."

Andrew Robinson is the author of *The Indus: Lost Civilizations* and *Earth-Shattering Events: Earthquakes, Nations and Civilization*.
e-mail: andrew@andrew-robinson.org

The many roads to the red planet – a memoir

As three spacecraft set off for Mars, a planetary scientist tells of those that went before. **By Alexandra Witze**

Once every 26 months, planetary orbits align in a way that makes it favourable to launch spacecraft from Earth to Mars. This July and August, three nations are aiming to take advantage of this window of opportunity. If all goes well, the United States and China will both launch rovers, and the United Arab Emirates will dispatch an orbiter.

These craft are the future of Mars exploration. What of the past? Planetary scientist Sarah Stewart Johnson lays it out vividly in *The Sirens of Mars*. Through a mix of personal memoir and scientific primer, she illuminates the history of astronomers and explorers who have been fascinated by this neighbouring world, known to the ancients as a ruddy dot shining in the night sky.

Johnson runs through all the usual highlights of people's obsession with the red planet over the years. There's Giovanni Schiaparelli in the nineteenth century, observing dark lines he called channels or *canali*, which were later misinterpreted as canals from a Martian civilization. There's Percival Lowell decades later, using his family fortune to build an observatory in Arizona and map Mars through the telescope night after night, hoping to reveal a world teeming with intelligent life. There's astrobiologist Carl Sagan, dreaming