



UNIT 1

TECHNOLOGICAL AND ENVIRONMENTAL TRANSFORMATIONS (8000-600 B.C.E.)

Short Cut

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GENERAL REMARKS

Hominid, or humanlike, creatures appeared on earth approximately 3 to 4 million years ago. Modern humans (*Homo sapiens*) evolved sometime around 200,000 years ago. According to most scholars, their birthplace was East Africa. From there, they spread to the rest of the globe, starting around 100,000 years ago.

The period from approximately 2.5 million years ago to 5,000 or 6,000 years ago is referred to as the **Stone Age**. During this time, human communities took shape but remained at a relatively low level of social and technological development. The principal form of social organization was kinship-based **hunting and foraging** (known more traditionally as hunting and gathering). After around 10,000 years ago, or 8000 B.C.E., during the **Neolithic Revolution**, human societies came to use a wider assortment of tools—increasingly made out of metal as well as out of stone—allowing them to populate a larger variety of ecosystems. They learned how to domesticate animals and plants, giving rise to **pastoralism** and **agriculture**. They developed elaborate **religions**, systems of recordkeeping (especially **writing**), and complex forms of economic exchange (including **trade**) and social organization (**villages**, then **cities**, with **labor specialization** and **social hierarchies** led typically by **patriarchal elites**). Agriculture, city-building, and **metallurgy** increased humanity's impact on the environment.

By around 5,000 years ago, the earliest **civilizations**—sedentary societies capable of agricultural production, city-building, and advanced political organization—took shape. The first of these appeared between 3500 and 2000 B.C.E., along the banks of major rivers.

- The Sumerian-Babylonian civilization of **Mesopotamia** (the Tigris and Euphrates rivers)
- **Egypt** (the Nile River)
- Indus cities like Mohenjo-Daro and Harappa (the **Indus River valley**)
- **Shang China** (the Yellow River, or Huang He)

Other early civilizations to know about are the **Olmecs**, who arose in Central America around 1200 B.C.E., and the **Chavín**, who appeared in the Andes Mountains after 900 B.C.E.

By 600 B.C.E., many other civilizations had emerged throughout Afro-Eurasia and the Americas. Many were connected by trade, warfare, and the **cultural diffusion** of ideas, beliefs, and technologies. Much of this transfer resulted from the interaction of **sedentary communities** with **nomadic peoples**. Several of the world's major religions had been born.

BROAD TRENDS

Humans and the Environment	
before 8000 B.C.E.	migration out of Africa to most continents ice ages persist until ca. 10,000–9000 B.C.E.
ca. 8000– 3500 B.C.E. (Neolithic Era)	erosion and overgrazing caused by pastoralism irrigation and forest clearing caused by agriculture
ca. 3500– 1200 B.C.E. (Bronze Age)	mining impact of water control systems (irrigation, canals) forest and swamp clearing + terracing of hillsides Bantu migrations begin (ca. 1500 B.C.E.) Indo-European migrations begin (ca. 1500 B.C.E.)
ca. 1200– 600 B.C.E. (Iron Age)	Bantu migrations continue Indo-European migrations continue

Humans and the Environment

- Migrations took *Homo sapiens* out of Africa sometime around 100,000 years ago, first to the Middle East and the warmer parts of Asia. By 40,000 years ago, humans had moved into Europe and northern Asia and are believed to have crossed the Bering land bridge into the Americas around 15,000 years ago.
- Key examples of later migrations include the movement of Indo-Europeans across Eurasia and the Bantu migrations throughout Africa.
- For thousands of years, human communities in the Americas (as well as plants, animals, and diseases there) developed in isolation from those in Afro-Eurasia.
- Until approximately 10,000 B.C.E., ice ages prevailed, restricting where Stone Age human communities could live and delaying the discovery of agriculture. The ending of the ice ages began the transition from the Paleolithic era (“early Stone Age”) to the Neolithic (“recent Stone Age”).
- During the Stone Age, human hunter-foragers learned to use fire. They also created tools and clothing from a variety of materials, allowing them to shape their environment and survive in a wider range of ecosystems. The Neolithic Revolution heightened the effectiveness and environmental impact of these tools.
- The more advanced the form of economic production, the more ecological stress caused by resource consumption, resource extraction, and manipulation of the environment. Pastoral herding caused overgrazing and erosion. Not only did agriculture deplete soil, but irrigation, swamp draining, forest clearing, and the terracing of hills and mountainsides radically altered the environment.
- Metallurgy, mining, and city building placed even greater burdens on the environment.
- On occasion, environmental changes destroyed societies or forced them to move elsewhere. Such changes—which included major temperature shifts, drought and desertification, deforestation, and the drying-up or altered flow of rivers—might be human-caused or natural.

Development and Interaction of Cultures (Including Technology)	
before 8000 B.C.E.	cave painting and rock art early music and storytelling burial of dead ancestor veneration, animism, and shamans use of fire weaving and pottery (early)
ca. 8000- 3500 B.C.E. (Neolithic Era)	ancestor veneration and shamanism polytheism hoes and plows weaving and pottery (widespread) the wheel and wheeled vehicles
ca. 3500- 1200 B.C.E. (Bronze Age)	<i>Gilgamesh Epic</i> <i>Egyptian Book of the Dead</i> , <i>Rig Veda</i> early recordkeeping (cuneiform, hieroglyphs, pictographs) Vedism Hebrew monotheism calendars, astronomy, mathematics urban planning (streets, sewers, walls) monumental architecture (temples, palaces, ziggurats, pyramids) metallurgy (bronze, limited use of iron) horse riding chariots bows (rewire vs. compound) and arrows
ca. 1200- 600 B.C.E. (Iron Age)	<i>Iliad</i> and <i>Odyssey</i> more recordkeeping (alphabet, quipu) Zoroastrianism (perhaps earlier) metallurgy (iron tools and weapons)

Development and Interaction of Cultures

- Artistic expression began as early as the Stone Age, with painting, music, and oral traditions such as storytelling.
- Important works of literature included the *Gilgamesh Epic*, the *Egyptian Book of the Dead*, the *Rig Veda*, and the Homeric epics (the *Iliad* and *Odyssey*). Artistic expression took the form of sculpture, textiles, painting, and monumental architecture (which served political purposes, as in palaces, or religious ones, as in temples, pyramids, and ziggurats).
- Writing and other forms of recordkeeping emerged in most civilized societies, starting around 3000 B.C.E. The earliest systems of writing were cuneiform, hieroglyphics, and pictograms in places like the Middle East and China. Later systems include the alphabet (Phoenician in origin, adopted by Hebrews, Greeks, and Romans, among others) and quipu (knot-tying in Andean South America).
- Prehistoric societies buried their dead and observed religious rituals. Early religious practices included ancestor veneration and shamanism.

- Organized religions arose during this era, such as polytheistic pantheons, Vedism, Hebrew monotheism, and Zoroastrianism.
- Key technologies and innovations from this era included pottery, hoes and plows, the weaving of textiles, wheels and wheeled vehicles, calendars, metallurgy (bronze, then iron), horse riding, chariots, and bows (recurve and compound) and arrows.
- Ideas, beliefs, knowledge, and technologies were often exchanged between societies through a process known as cultural diffusion. Sometimes they arose within a society as the result of independent innovation.

State Building, Expansion, and Conflict	
before 8000 B.C.E.	no organized states
ca. 8000- 3500 B.C.E. (Neolithic Era)	villages and other organized communities early city-states
ca. 3500- 1200 B.C.E. (Bronze Age)	Mesopotamia (Tigris and Euphrates, ca. 3500 B.C.E. +) Code of Ur-Nammu and Code of Hammurabi Egypt (Nile, ca. 3100 B.C.E. +) Mohenjo-Daro and Harappa (Indus, ca. 2600 B.C.E. +) Shang China (Huang He, ca. 1600 B.C.E. +) empires use of religion to legitimize political rule
ca. 1200- 600 B.C.E. (Iron Age)	Olmec (ca. 1200 B.C.E. +) Chavín (ca. 900 B.C.E. +) Zhou China (ca. 1100 B.C.E. +) origins of “mandate of heaven” concept feudalism bureaucracies

State Building, Expansion, and Conflict

- The first states grew out of core civilizations in the Middle East (Mesopotamia and Egypt), the Indus River valley (Mohenjo-Daro and Harappa), China (the Shang), Mesoamerica (the Olmecs), and the Andes of South America (the Chavín).
- With the development of agriculture and fixed settlements, complex forms of political organization began to appear, including the formation of elite classes and bureaucracies. Cities emerged as centers of political leadership.
- Most governments were monarchies (rule by a single leader) or oligarchies (rule by a small elite). Representative forms of government were all but nonexistent.
- Some states had highly centralized governments. In others, the central authority remained comparatively weak, leading to loosely organized confederations or decentralized feudal systems.
- Law codes, such as Sumeria’s code of Ur-Nammu and Babylonia’s the Code of Hammurabi, appeared. Although they were typically harsh and often gave extra rights and privileges to elite classes, they represented an improvement over lawlessness and arbitrary rule.

- Religion was commonly used to legitimize political systems. Typically, the ruler was seen as divine in his or her own right or his or her rule was said to be justified by the will of the gods.
- Organized warfare became more common as states formed. Some states built conquest states, or empires, by dominating their neighbors.
- Attacks by nomads and pastoralists caused civilized societies to react by building stronger city walls, adopting weapons like recurved and compound bows, and learning the arts of cavalry warfare and charioteering.

Economic Systems	
before 8000 B.C.E.	hunting and foraging barter and limited trade
ca. 8000– 3500 B.C.E. (Neolithic Era)	hunting and foraging domestication of animals gives rise to nomadic pastoralism domestication of plants gives rise to early agriculture early regional trade networks
ca. 3500– 1200 B.C.E. (Bronze Age)	agriculture spreads trade networks become regional and transregional slavery emerges (household servitude and hard labor) Mesopotamian-Indus trade Mesopotamian-Egyptian trade Nubian-Egyptian trade Phoenician trade in the Mediterranean
ca. 1200– 600 B.C.E. (Iron Age)	agriculture spreads further regional and transregional trade networks become more extensive coins first used as currency

Economic Systems

- Hunting and foraging emerged as the means of livelihood for most Stone Age peoples. Hunter-forager societies lived at subsistence levels and possessed few goods. Labor specialization was limited, while trade, where it existed, was based on simple barter.
- During the Neolithic Revolution, domestication of animals gave birth to pastoralism, an economic practice based on herding, which made it easier to maintain a constant supply of food. Most pastoral herders were nomadic.
- Also during the Neolithic Revolution, domestication of plants gave birth to agriculture. Even more so than pastoralism, agriculture ensured not just a constant supply of food, but food surpluses that caused profound social changes (including the accumulation of wealth and the concept of private property).
- Trade became more common, first on a local basis, then at the regional and transregional levels. Cities served as important points of economic exchange.
- Trade networks extended overland, but tended to follow rivers and coastlines where they could, because large-scale transport was easier by water than by land. Important transregional trade networks include Mesopotamian-Egyptian trade, Egyptian-Nubian trade, trade between Mesopotamia and the Indus River valley, and Phoenician trade throughout the Mediterranean.

- Slavery emerged as a labor system during this period. Often debtors or prisoners of war, slaves might be used for hard labor (in fields or mines, for example), as servants, or to perform other functions.

Social Structures	
before 8000 B.C.E.	family and kin-based units (limited hierarchy) limited gender division of labor?
ca. 8000– 3500 B.C.E. (Neolithic Era)	some degree of hierarchy and gender division of labor arises from pastoralism labor specialization + greater hierarchy and social stratification thanks to food surpluses the first cities
ca. 3500– 1200 B.C.E. (Bronze Age)	more villages and cities hierarchies and elite classes (religious and political) become more complex artisan and warrior classes emerge caste systems appear in certain societies gender division of labor deepens patriarchalism becomes more common slaves come to occupy the bottom ranks of hierarchical societies
ca. 1200– 600 B.C.E. (Iron Age)	[the above trends widen and deepen]

Social Structures

- Hunter-forager societies tended to be family- and clan-based, and were for the most part not hierarchical or stratified.
- Basic physical differences between the sexes are thought to have led to a gender division of labor among Stone Age hunter-foragers.
- Pastoral societies were marked by a somewhat higher degree of hierarchy, social stratification, and gender division of labor.
- Agriculture caused many societies to abandon nomadism in favor of a sedentary, or settled, lifestyle.
- By allowing the accumulation of food surpluses, agriculture enabled some members of society to make a living by means other than growing food. This resulted in labor specialization and the emergence of elite and non-elite classes. Social stratification became more pronounced, leading in some societies to strict caste systems.
- Specialized classes included artisans, warriors, clergy, and merchants/traders.
- Patriarchalism and an increasingly sharp gender division of labor became characteristic of most agricultural societies. In most places, women were relegated to secondary roles, although the degree to which this happened depended on the society in question. Women might have certain rights (divorce, inheritance, ownership of property), and they might also exercise informal influence within their societies or over their families.
- Slavery and other forms of coerced labor became increasingly common.

QUESTIONS AND COMPARISONS TO CONSIDER

- What roles do geography, climate, and environment play in shaping human societies? How have different societies affected their environments?
- How do technological advancement, resource extraction and consumption, and environmental impact relate to each other? What stresses have been placed on the environment by hunter-foragers, pastoralists, agricultural villages, and cities?
- How did technology change trade, transport, and agriculture?
- What features distinguish less advanced societies from civilizations?
- How do agricultural and urban societies compare with hunter-forager and pastoral societies? How do these different societies interact? How did military threats from pastoral nomads influence civilized societies?
- How did the appearance of cities affect the development of ancient societies? What roles did monumental architecture play?
- When and where did cultural interaction and diffusion change societies technologically, scientifically, and culturally? What about independent innovation?
- Compare how different religions and philosophical traditions have supported political regimes. Also, how have they been used to justify class systems, hierarchies, and gender and ethnic discrimination?
- How have different societies organized themselves economically? What role did trade play in the prehistoric and ancient world, both regionally and transregionally? Compare Mesopotamian-Egyptian trade, Egyptian-Nubian trade, and Mesopotamian-Indus trade.
- What roles did large-scale migrations play in various parts of the world during this period? Consider the passage of Asiatic peoples to the Americas over the Bering land bridge, the Bantu migrations throughout Africa, and the spread of Indo-Europeans throughout Eurasia.