

Humans Try to Control Nature

MAIN IDEA

ECONOMICS The development of agriculture caused an increase in population and the growth of a settled way of life.

WHY IT MATTERS NOW

New methods for obtaining food and the development of technology laid the foundations for modern civilizations.

TERMS & NAMES

- nomad
- hunter-gatherer
- Neolithic Revolution
- slash-and-burn farming
- domestication

SETTING THE STAGE By about 40,000 years ago, human beings had become fully modern in their physical appearance. With a shave, a haircut, and a suit, a Cro-Magnon man would have looked like a modern business executive. However, over the following thousands of years, the way of life of early humans underwent incredible changes. People developed new technology, artistic skills, and most importantly, agriculture.

TAKING NOTES

Outlining Use an outline to organize main ideas and details.

Humans Try to Control Nature

- I. Early Advances in Technology and Art
 - A.
 - B.
- II. The Beginnings of Agriculture

Early Advances in Technology and Art

Early modern humans quickly distinguished themselves from their ancestors, who had spent most of their time just surviving. As inventors and artists, more advanced humans stepped up the pace of cultural changes.

Tools Needed to Survive For tens of thousands of years, men and women of the Old Stone Age were nomads. **Nomads** were highly mobile people who moved from place to place foraging, or searching, for new sources of food. Nomadic groups whose food supply depends on hunting animals and collecting plant foods are called **hunter-gatherers**. Prehistoric hunter-gatherers, such as roving bands of Cro-Magnons, increased their food supply by inventing tools. For example, hunters crafted special spears that enabled them to kill game at greater distances. Digging sticks helped food gatherers pry plants loose at the roots.

Early modern humans had launched a technological revolution. They used stone, bone, and wood to fashion more than 100 different tools. These expanded tool kits included knives to kill and butcher game, and fish hooks and harpoons to catch fish. A chisel-like cutter was designed to make other tools. Cro-Magnons used bone needles to sew clothing made of animal hides.

Artistic Expression in the Paleolithic Age The tools of early modern humans explain how they met their survival needs. Yet their world best springs to life through their artistic creations. Necklaces of seashells, lion teeth, and bear claws adorned both men and women. People ground mammoth tusks into polished beads. They also carved small realistic sculptures of animals that inhabited their world.

As you read in the Cave Paintings feature, Stone Age peoples on all continents created cave paintings. The best-known of these are the paintings on the walls and ceilings of European caves, mainly in France and Spain. Here early artists drew lifelike images of wild animals. Cave artists made colored paints from

charcoal, mud, and animal blood. In Africa, early artists engraved pictures on rocks or painted scenes in caves or rock shelters. In Australia, they created paintings on large rocks.

The Beginnings of Agriculture

Vocabulary

Edible means “safe to be eaten.”

For thousands upon thousands of years, humans survived by hunting game and gathering edible plants. They lived in bands of 25 to 70 people. The men almost certainly did the hunting. The women gathered fruits, berries, roots, and grasses. Then about 10,000 years ago, some of the women may have scattered seeds near a regular campsite. When they returned the next season, they may have found new crops growing. This discovery would usher in the **Neolithic Revolution**, or the agricultural revolution—the far-reaching changes in human life resulting from the beginnings of farming. The shift from food-gathering to food-producing culture represents one of the great breakthroughs in history.

Causes of the Agricultural Revolution Scientists do not know exactly why the agricultural revolution occurred during this period. Change in climate was probably a key reason. (See chart on page 17.) Rising temperatures worldwide provided longer growing seasons and drier land for cultivating wild grasses. A rich supply of grain helped support a small population boom. As populations slowly rose, hunter-gatherers felt pressure to find new food sources. Farming offered an attractive alternative. Unlike hunting, it provided a steady source of food.

Early Farming Methods Some groups practiced **slash-and-burn farming**, in which they cut trees or grasses and burned them to clear a field. The ashes that remained fertilized the soil. Farmers planted crops for a year or two, then moved to another area of land. After several years, trees and grass grew back, and other farmers repeated the process of slashing and burning.

History *in* Depth

The Neolithic Ice Man

In 1991, two German hikers made an accidental discovery that gave archaeologists a firsthand look at the technology of early toolmakers. Near the border of Austria and Italy, they spotted the mummified body of a prehistoric traveler, preserved in ice for some 5,000 years (upper right).

Nicknamed the “Ice Man,” this early human was not empty-handed. The tool kit found near him included a six-foot longbow and a deerskin case with 14 arrows. It also contained a stick with an antler tip for sharpening flint blades, a small flint dagger in a woven sheath, a copper ax, and a medicine bag.

Scientific research on the body (lower right) concluded that the Ice Man was in his 40s when he died in the late spring or early summer from an arrow wound. Scientists also determined that in the hours before his death, he ate wild goat, red deer, and grains. The Ice Man is housed in a special museum in Bolzano, Italy.

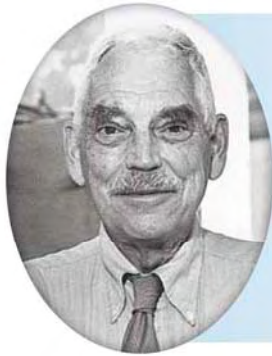


Domestication of Animals Food gatherers' understanding of plants probably spurred the development of farming. Meanwhile, hunters' expert knowledge of wild animals likely played a key role in the **domestication**, or taming, of animals. They tamed horses, dogs, goats, and pigs. Like farming, domestication of animals came slowly. Stone Age hunters may have driven herds of animals into rocky ravines to be slaughtered. It was then a small step to drive herds into human-made enclosures. From there, farmers could keep the animals as a constant source of food and gradually tame them.

Not only farmers domesticated animals. Pastoral nomads, or wandering herders, tended sheep, goats, camels, or other animals. These herders moved their animals to new pastures and watering places.

Agriculture in Jarmo Today, the eroded and barren rolling foothills of the Zagros Mountains in northeastern Iraq seem an unlikely site for the birthplace of agriculture. According to archaeologist Robert Braidwood, thousands of years ago the environmental conditions of this region favored the development of agriculture. Wild wheat and barley, along with wild goats, pigs, sheep, and horses, had once thrived near the Zagros Mountains.

In the 1950s, Braidwood led an archaeological dig at a site called Jarmo. He concluded that an agricultural settlement was built there about 9,000 years ago:



PRIMARY SOURCE **A**

We found weights for digging sticks, hoe-like [tools], flint-sickle blades, and a wide variety of milling stones. . . . We also discovered several pits that were probably used for the storage of grain. Perhaps the most important evidence of all was animal bones and the impressions left in the mud by cereal grains. . . . The people of Jarmo were adjusting themselves to a completely new way of life, just as we are adjusting ourselves to the consequences of such things as the steam engine. What they learned about living in a revolution may be of more than academic interest to us in our troubled times.

ROBERT BRAIDWOOD, quoted in *Scientific American*

The Jarmo farmers, and others like them in places as far apart as Mexico and Thailand, pioneered a new way of life. Villages such as Jarmo marked the beginning of a new era and laid the foundation for modern life.

Villages Grow and Prosper

The changeover from hunting and gathering to farming and herding took place not once but many times. Neolithic people in many parts of the world independently developed agriculture, as the map at the right shows.

Farming Develops in Many Places Within a few thousand years, people in many other regions, especially in fertile river valleys, turned to farming.

- **Africa** The Nile River Valley developed into an important agricultural center for growing wheat, barley, and other crops.
- **China** About 8,000 years ago, farmers along the middle stretches of the Huang He (Yellow River) cultivated a grain called millet. About 1,000 years later, farmers first domesticated wild rice in the Chang Jiang River delta.
- **Mexico and Central America** Farmers cultivated corn, beans, and squash.
- **Peru** Farmers in the Central Andes were the first to grow tomatoes, sweet potatoes, and white potatoes.

From these early and varied centers of agriculture, farming then spread to surrounding regions. **B**

MAIN IDEA

Analyzing Primary Sources

A Why do you think Braidwood believes that we can learn from early peoples?

MAIN IDEA

Making Inferences

B What advantages might farming and herding have over hunting and gathering?



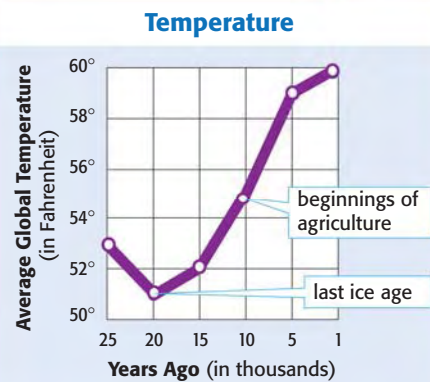
Agriculture Emerges, 5000–500 B.C.

INTERACTIVE

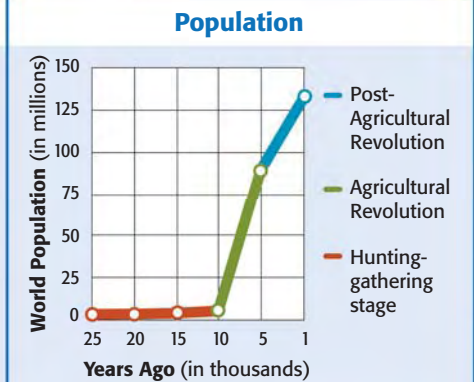


▲ A Neolithic grindstone and vessel used to grind grain

Agricultural Revolution



Source: *Ice Ages, Solving the Mystery*



Source: *A Geography of Population: World Patterns*

SKILLBUILDER: Interpreting Maps and Charts

- Map** What geographic feature favored the development of agricultural areas before 5000 B.C.?
- Chart** What effect did the agricultural revolution have on population growth? Why?

Catal Huyuk In 1958, archaeologists discovered the agricultural village now known as Catal Huyuk (chuh•TUL hoo•YOOK), or the “forked mound.” It was located on a fertile plain in south-central Turkey (about 30 miles from modern-day Konya), near a twin-coned volcano. Catal Huyuk covered an area of about 32 acres. At its peak 8,000 years ago, the village was home to 5,000 to 6,000 people who lived in about 1,000 dwellings. These rectangular-shaped houses were made of brick and were arranged side-by-side like a honeycomb.

▼ A 9,000-year-old baked-clay figurine found in Catal Huyuk



Catal Huyuk showed the benefits of settled life. Its rich, well-watered soil produced large crops of wheat, barley, and peas. Villagers also raised sheep and cattle. Catal Huyuk’s agricultural surpluses supported a number of highly skilled workers, such as potters and weavers. But the village was best known at the time for its obsidian products. This dark volcanic rock, which looks like glass, was plentiful. It was used to make mirrors, jewelry, and knives for trade.

Catal Huyuk’s prosperity also supported a varied cultural life. Archaeologists have uncovered colorful wall paintings depicting animals and hunting scenes. Many religious shrines were dedicated to a mother goddess. According to her worshipers, she controlled the supply of grain.

The new settled way of life also had its drawbacks—some of the same that affected hunter-gatherer settlements. Floods, fire, drought, and other natural disasters could destroy a village. Diseases, such as malaria, spread easily among people living closely together. Jealous neighbors and roving nomadic bands might attack and loot a wealthy village like Catal Huyuk.

Despite problems, these permanent settlements provided their residents with opportunities for fulfillment—in work, in art, and in leisure time. As you will learn in Section 3, some early villages expanded into cities. These urban centers would become the setting for more complex cultures in which new tools, art, and crafts were created.

Vocabulary

Shrines are places where sacred relics are kept.

SECTION 2 ASSESSMENT

TERMS & NAMES 1. For each term or name, write a sentence explaining its significance.

- nomad
- hunter-gatherer
- Neolithic Revolution
- slash-and-burn farming
- domestication

USING YOUR NOTES

2. Which effect of the development of agriculture was the most significant?

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MAIN IDEAS

- 3. How did Cro-Magnon’s new tools make survival easier?
- 4. What factors played a role in the origins of agriculture?
- 5. What were the first crops grown in the Americas?

CRITICAL THINKING & WRITING

- 6. **MAKING INFERENCES** What kinds of problems did Stone Age peoples face?
- 7. **SUMMARIZING** In what ways did Neolithic peoples dramatically improve their lives?
- 8. **HYPOTHESIZING** Why do you think the development of agriculture occurred around the same time in several different places?
- 9. **WRITING ACTIVITY** **SCIENCE AND TECHNOLOGY** Write a two-paragraph **opinion paper** on the most significant consequences of the Agricultural Revolution.

CONNECT TO TODAY CREATING A CHART

Use text information on Jarmo and Catal Huyuk to make a **chart** listing the tools, weapons, and other artifacts that archaeologists today might find at an ancient site of a farming settlement.

ANSWER QUESTIONS ON A SEPARATE SHEET OF 8.5 x 11 SHEET OF PAPER WITH YOUR NAME AND PERIOD ON IT.

1. What is one hypothesis (theory) as to how the agricultural Revolution began?
2. What was one result of the growth in human population?
3. What was one result of the domestication of animals?
4. Look at the graphs on page 17. Explain the relationship between the agricultural revolution and human population.
5. What were two **ADVANTAGES** of settled life in the village of Catal Hayuk?
6. What were two **DISADVANTAGES** of settled life in the village of Catal Hayuk?