About Age of Empires

Sheets of ice up to three miles high covered much of the Earth's northern hemisphere during the last ice age. Our human ancestors persevered in the harsh ice age environment by developing new technologies and survival strategies at unprecedented rates. When climate changes melted and removed the ice 12,000 years ago, humans were uniquely suited to take advantage of the new worlds that were beckoning.

During the next 5,000 years—an insignificant span in terms of geological time—humans expanded to become the dominant species on Earth. Human populations exploded because new technologies for hunting and food gathering put all other species at a disadvantage. Within 3,000 more years, humans had established the first great civilizations on Earth.

The theme of Age of Empires is the rise of the first great civilizations over the 12,000 years that followed the last ice age. You are the guiding spirit of a tribe that predates one of the great cultures of antiquity. Your goal is to build your tribe into a mighty civilization that can vie for world (game) dominance (victory). You begin the game in the Stone Age with a small tribe of villagers on an unexplored map. As you move your tribesmen over the map, you reveal different terrain types and locate sources of food, wood, stone, and gold, which villagers gather by hunting, fishing, foraging, farming, chopping trees, and mining. You must gather enough resources and build enough housing to support your growing civilization.

Constructing buildings lets you train military units and boats to defend your civilization or attack enemy civilizations on land or at sea. Constructing buildings also lets you research technologies that benefit your civilization, such as increasing the resources you can gather or the strength of your military units.

As you advance through the ages, you can build new buildings, create new boats and military units, and research new technologies.

You can establish alliances with other civilizations, exchange tribute, and establish trade routes. Other civilizations are controlled by human or computer players.

The winner of a game is determined by the victory conditions of the scenario. You can play a variety of predesigned single player campaigns, as well as single player or multiplayer random maps or scenarios. Or you can use the scenario builder to create your own custom scenarios.
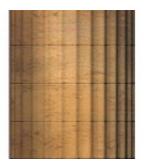
Getting started

Learning to play

The best way to learn the basics of Age of Empires is to play the Ascent of Egypt learning campaign provided with the game. You'll learn how to hunt, stockpile resources, construct buildings, and engage in combat.

To play the learning campaign

1 On the Age of Empires menu, click **Single Player**.

2 Click **Campaign**.

3 Type your player name, or click a player name in the **Name** list.

4 Click **OK** to display the list of campaigns.

5 Select the **Ascent of Egypt Learning Campaign**. Only the first scenario is displayed. After you complete a scenario, the next scenario in the campaign appears at the end of the list.

6 Select the **Difficulty Level** (the skill of civilizations controlled by the computer). The levels range from easy to hardest.

7 Click **OK** to start the scenario.

After the cinematic plays, the scenario instructions are revealed. To display the scenario instructions while you are playing the game, click the **Menu** button on the menu bar, and then click **Scenario Instructions**.

Setting up a game

Before you start a game, you must choose which type of game to play—single player or multiplayer, and random map, scenario, or campaign.
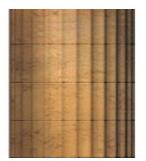
The type of game you choose determines what you must do to win the game.

You can play one of twelve mighty civilizations, each with different strengths and weaknesses.

Starting on an unexplored map

You start the game with a few villagers and a Town Center on an unexplored (black) map. Moving a villager into the black area reveals the map terrain. To move a villager, click the villager, and then right-click the location to move to. Enemy buildings and walls are not visible until you explore the area of the map where they are located.

As you explore the map, you discover resources to increase your stockpile of food,

wood, stone, and gold. Villagers can chop trees for wood, forage berry bushes, hunt animals, and fish for food, as well as mine for stone and gold. To assign a villager a task, click a villager, and then right-click a work site, such as a tree, animal, or stone mine. You can also increase your stockpile by trading with or receiving tribute from other civilizations.

Building your civilization

You use the resources (food, wood, stone, gold) in your stockpile to construct buildings. You must build enough Houses to support the population of your civilization. Each House supports four villagers, boats, or military units. Each civilization can create a maximum of 50 villagers, military units, and boats.

Advancing through the ages

The resources in your stockpile are also used to advance through the ages. There are four ages: Stone Age, Tool Age, Bronze Age, and Iron Age. You typically start the game in the Stone Age and strive to advance to the Iron Age. To advance to the next age, you must have a Town Center and build two different buildings from the current age. Then click the Town Center, and click the **Advance to Next Age** button.

As you advance through the ages, you can build new buildings and military units and research technologies that benefit your civilization. For example, researching Leather Armor decreases the damage your military units receive in combat. The buildings, military units, and technologies that are available depend on which civilization you are playing. The technology trees for each civilization are in the Appendix of the Age of Empires manual and in the Docs folder on the Age of Empires disc.

Engaging in combat

Military units and villagers can engage in combat on land. War ships can engage in combat at sea. To win a game by military conquest, your civilization (or team) must destroy all enemy villagers, military units, war ships, and buildings. You do not need to destroy trade vessels, transport vessels, fishing vessels, Artifacts, Ruins, or walls. You can pursue an allied victory with other civilizations.

Wounded villagers and military units can be healed by a Priest. Enemy villagers, military units, buildings, and boats can be converted by a Priest. Damaged buildings and boats can be repaired by a villager.

Choosing a game

You can play single player and multiplayer games based on randomly generated maps, scenarios, or campaigns.

- **Campaign** – Single player – A predesigned series of related scenarios that chronicle the rise of one of the mighty civilizations of antiquity. New players should play the Ascent of Egypt learning campaign to learn the basics of Age of Empires.

- **Scenario** – Single player or multiplayer – A predesigned game that is not part of a campaign.

- **Random map** – Single player or multiplayer – A game based on a randomly generated world map. You can change the game settings and the victory condition.

- **Random map (death match)** – Single player or multiplayer – A variation of a random map in which players start with stockpiles of 20,000 food, wood, stone, and 10,000 gold and then fight to the death.

- **Random map (score)** – Single player or multiplayer – A variation of a random map in which the victory condition is based on the players' scores.

- **Random map (time limit)** – Single player or multiplayer – A variation of a random map in which the victory condition is based on who earns the highest score within the time limit.

- **Cooperative game** – Multiplayer – A random map, death match, or scenario in which two or more human players share control of a single civilization. Each player can give unrestricted (and even conflicting) orders to all units.

Winning a game

In a random map or death match, you can win the game by achieving any one of the standard victory conditions. Players can pursue any of the standard victory conditions to win. For example, player 1 might try to control all Artifacts, player 2 might try to build a Wonder, and player 3 might try to achieve military conquest. The first player to be successful wins the game.

The standard victory conditions include:

- **Artifacts** (the first player to control and hold all Artifacts wins)
- **Ruins** (the first player to control and hold all Ruins wins)
- **Wonders** (the first player to build and hold a Wonder wins)
- **Conquest** (the first player to conquer all enemies).

Or, if you do not want to use the standard victory conditions, you can choose your own victory condition:

- **Conquest** (all players must try to achieve military conquest)
- **Score** (all players compete to achieve the specified score)
- **Time Limit** (all players compete to achieve the highest score within the time limit).

You can change the victory condition in single player games or multiplayer games.

Artifacts

Artifacts are objects akin to the Ark of the Covenant that were crafted by now-lost cultures and bring prestige to the civilization that possesses them. They can be captured from other civilizations in a game and carried away. Control of Artifacts counts toward your score. A Random map contains five Artifacts or none.

In a random map with standard victory conditions, the first civilization (or team) to control all Artifacts for 2000 years wins the game. An Artifact is controlled by the last civilization to move a villager, military unit, or boat nearby. The color of an Artifact indicates which civilization controls it. The owner of the Artifact can move it on land or on a transport vessel. Artifacts cannot be destroyed. For example, if a transport vessel sinks with an Artifact on board, the Artifact appears on a nearby shore.

When a civilization controls all Artifacts, the other civilizations are notified and a countdown clock appears in the upper-right corner of the game screen. The color of the clock indicates which civilization controls the Artifacts. The first civilization to control all Artifacts for 2000 years (until the clock reaches zero, approximately 15 minutes), wins the game. If an Artifact changes ownership before 2000 years have passed, the countdown is terminated.

Ruins

Ruins are ancient structures resembling Stonehenge that were built by now-lost cultures and bring prestige to the civilization that controls them. Ruins cannot be moved. Ownership may be taken away by another civilization. Control of Ruins counts toward your score. A Random map contains five Ruins or none.

In a random map with standard victory conditions, the first civilization (or team) to control all Ruins for 2000 years wins the game. Ruins are controlled by the last civilization to move a villager, military unit, or boat nearby. The color of a Ruin indicates which civilization controls it. Ruins cannot be destroyed.

When a civilization controls all Ruins, the other civilizations are notified and a countdown clock appears in the upper-right corner of the game screen. The color of the clock indicates which civilization controls the Ruins. The first civilization to control all Ruins for 2000 years (until the clock reaches zero, approximately 15 minutes), wins the game. If a Ruin changes ownership before 2000 years have passed, the countdown is terminated.

Wonders

A Wonder is the crowning achievement of civilizations who build one. Examples of historic ancient Wonders that have become icons for their civilization are the Egyptian Pyramids, the Great Wall of China, and the Athenian Acropolis. A civilization can build a Wonder after advancing to the Iron Age.

In a random map with standard victory conditions, the first civilization to build a Wonder that stands for 2000 years wins the game. When a civilization begins to build a Wonder, the other civilizations are notified and shown its location on the diamond-shaped map in the lower-right corner of the game screen. When the Wonder is completed, the other civilizations are again notified and a countdown clock appears in the upper-right corner of the game screen. The color of the clock indicates which civilization owns the Wonder. The first civilization to build a Wonder that stands for 2000 years (until the clock reaches zero, approximately 15 minutes), wins the game. If a Wonder is destroyed before 2000 years have passed, the countdown is terminated.

A civilization can build more than one Wonder. Wonders standing at the end of the game (even if they were not the first Wonder to stand for 2000 years) provide the owning civilization with score points.

Conquest

In a random map with standard victory conditions, you can win the game by achieving military conquest even if the other players are pursuing one of the other standard victory conditions (Artifacts, Ruins, or Wonders). If you do not want to play the standard victory conditions, you can set the victory condition to Conquest.

To win a game by military conquest, your civilization (or team) must destroy all enemy villagers, military units, war ships, and buildings. You do not need to destroy trade vessels, transport vessels, fishing vessels, Artifacts, Ruins, or walls.

Time limit

If you do not want to play the standard victory conditions, you can set the victory condition to Time Limit. In a time limit game, you select the time limit after which the game automatically ends. A countdown clock is displayed in the upper-right corner of the game screen. The civilization (or team) with the highest score when the clock reaches zero wins the game. The team score is the average of all team members' scores.

Score

If you do not want to play the standard victory conditions, you can set the victory condition to Score. In a score game, the game creator chooses the score to achieve. The first civilization (or team) to achieve the score or military conquest wins the game. In a score game, constructing Wonders and owning Artifacts and Ruins provides points but does not automatically end the game. For allied victory, the score is the average of all team members' scores. Score can be set as the victory condition or used simply as a measure of achievement.

The great civilizations of antiquity were those that achieved a high level of cultural and technological development. Greatness was also measured by influence over distance and over time. The Sumerian civilization, for example, was never particularly large but the importance of the wheel and writing, for which they are credited, was enormous. The Greeks, more than any other ancient culture, had the greatest impact on the modern world.

Greatness was somewhat dependent on military prowess. Most of the important ancient civilizations were military powers at one time and spread their culture by conquest. Those cultures that did not develop a strong military did not usually last long enough to have a significant impact on world events. A strong military ensured longevity and the opportunity to become great.

Great civilizations left a lasting legacy of architecture, literature, language, ideas, and technological innovation that influenced those that followed. Age of Empires encompasses this definition of civilization with its score system. The greatness of your civilization is measured by the points you earn for a variety of achievements during the play of a game. The civilization score for your civilization can be compared to that of others in your game during play and at game end. Civilization scores are calculated for all players (human and computer) as the game progresses.

To display civilization scores

The civilization scores are shown in the lower-right corner of the game screen.

▶ To turn the display on or off, click the **S** button above the diamond-shaped map in the lower-right corner of the game screen.

The scores are shown as civilization score/team score. The list of players is ranked by team score and then by civilization score. The team score is the average of all team members' scores.

▶ To display the details of your score, click the **Menu** button on the menu bar, and then click **Achievements**.

Scores are calculated as shown below. This information is also on the Technology Tree Foldout.

The bonus points (such as most military units) can change ownership throughout the game. For example, if player 1 has 30 military units and player 2 has 35 military units, player 2 receives the 25-point bonus. However, if player 1 builds 6 more

military units (or kills 6 of player 2's military units), player 1 receives the 25-point bonus.

Military

Kills — one-half point/unit.

Buildings destroyed — 1 point/building.

Generalship — # kills - # losses (value must be positive).

Most military units and towers — 25 point bonus.

Economy

Gold from mining and trade — 1/100 of value.

Net resources tributed — 1/60 of value.

Villager population (includes fishing, trade, and transport vessels) — 1 point/Villager.

Largest Villager population (includes fishing, trade, and transport vessels) — 25 point bonus.

Exploration — 1 point/3 percent of map.

Largest area explored — 25 point bonus.

Religion

Conversions — 2 points/conversion.

Most conversions — 25 point bonus.

Temples built — 3 points/Temple.

Ruins controlled — 10 points/Ruin.

Artifacts controlled — 10 points/Artifact.

Control of all Ruins or Artifacts — 50 point bonus.

Technology

Technologies researched — 2 points/technology.

Most technologies researched — 50 point bonus.

First civilization to Bronze Age — 25 point bonus.

First civilization to Iron Age — 25 point bonus.

Survival and Wonders

Elimination before game end — -100 points.

Wonders held — 100 points/Wonder.

Choosing a civilization

Play one of history's twelve mightiest civilizations! Command the Greek phalanx, the world's best infantry for hundreds of years. Lead the chariots of the Hittites, or Assyrians. Build up the vast agricultural empire of Egypt, Babylon, or Sumeria. Guide the Persians from their small enclave to prominence as a world power. Guide the Shang (China), Choson (Korea), or Yamato (Japan) for control of Asia. Dominate world sea trade as the Phoenicians or Minoans.

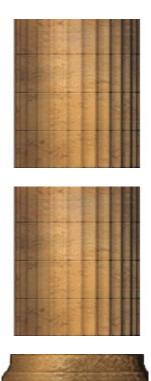The civilization you choose to play depends on the <u>victory conditions</u> of the game and the strengths and weaknesses of your opponents. For example, if a world has extensive seas, choose to play a civilization with advantages in ship building or speed (Yamato, Phoenician, Minoan). If you are competing with the Persians, prepare for eventual clashes with War Elephants. More than one player can choose the same civilization. In a <u>multiplayer</u> cooperative game, two or more players can choose the same player number and share control of a single civilization.

Each civilization has strengths and weaknesses and can research different technologies. The special attributes of each civilization are listed below and on the Technology Tree Foldout. The technology trees for each civilization are in the Appendix of the Age of Empires manual and in the Docs folder on the Age of Empires disc.

- **Assyrian**
  +40% Archery Range unit fire rate.
  Villagers 30% faster.

- **Babylonian**
  Double wall and tower hit points.
  +30% Priest rejuvenation rate.
  +30% stone mining.

- **Choson**
  +80 Long Swordsman and Legion hit points.
  +2 tower range.
  -30% Priest cost.

- **Egyptian**
  +20% gold mining.
  +33% Chariot and Chariot Archer hit points.
  +3 Priest range.

- **Greek**
  Hoplite, Phalanx, and Centurion 30% faster.
  War ships 30% faster.

- **Hittite**
  Double Stone Thrower, Catapult, Heavy Catapult hit points.
  +1 Archery Range unit attack.
  +4 war ship range.

- **Minoan**
  -30% ship cost.
  +2 Composite Bowman range.
  +25% Farm production.
- **Persian**
  +30% hunting.
  -30% Farm production.
  War Elephant and Elephant Archer 50% faster.
  +50% Trireme fire rate.
- **Phoenician**
  -25% War Elephant and Elephant Archer cost.
  +65% Catapult Trireme and Juggernaught fire rate.
- **Shang**
  -30% Villager cost.
  Double wall hit points.
- **Sumerian**
  +15 Villager hit points.
  +50% Stone Thrower, Catapult, Heavy Catapult fire rate.
  Double Farm production.
- **Yamato**
  -25% Horse Archers, Scout, Cavalry, Heavy Cavalry, Cataphract cost.
  Villagers 30% faster.
  +30% ship hit points.

Age of Empires tips and strategies

Information on tips and strategies is not available in the trial version.

Using the interface

For more information about using the interface, use the pop-up Help or refer to the *Age of Empires* manual.

To display popup Help

▶   Click the **?** button in the lower-right corner of the game screen, and then click an item on the screen.

To display the online Help from popup Help, click the **More Help** button.

To scroll the map

▶   On the large map, move the mouse to the edge of the game screen in the direction you want to scroll.

-or-

On the diamond-shaped map in the lower-right corner of the game screen, click a location, or drag the white box to the location.

To chat during a multiplayer game

1 Click the **Chat** button on the menu bar, and then select which players should receive the message: allies, enemies, everyone, or a particular player.

-or-

To display only the chat text box, press ENTER.

2 Type a message. To taunt your opponents with a recorded message, type a number from 1 to 25.

3 Press ENTER to send the message.

To save a game

1 Click the **Menu** button on the menu bar.

2 Click **Save**.

3 Type a name for the game, or select the game to save.

Saved games are located in the Savegame folder where *Age of Empires* is installed.

To exit a game

1 Click the **Menu** button on the menu bar.

2 Click **Quit Game**.

To resign a multiplayer game

1 Click the **Menu** button on the menu bar.

2 Click **Resign**.

All units on the map become visible so you can observe the game, but you can no longer participate.

Single player

- Playing a random map, death match, or scenario
- Playing a campaign
- Playing a saved game

Playing a random map, death match or scenario

A random map is a single player or multiplayer game based on a randomly generated world map. You can win the game by achieving any one of the standard victory conditions, or you can set the victory condition to Conquest, Score, or Time Limit.

A death match is a random map in which players start with stockpiles of 20,000 food, wood, stone, and 10,000 gold. You can win the game by achieving a military conquest, building a Wonder, or achieving the highest score.

A scenario is a predesigned game that is not part of a campaign. The victory conditions are revealed when you start the scenario. You can create custom scenarios using the scenario builder and share them with other players.

You can also play a random map, death match, or scenario in a multiplayer game.

To play a random map, death match, or scenario

1 On the Age of Empires menu, click **Single Player**.

2 Click **Random Map**, **Death Match**, or **Scenario**.

　If you are playing a scenario, select the scenario to play, and then click **OK**.

3 Select the player settings:

- **Civ** – Each civilization has special skills and can research different technologies. More than one player can choose the same civilization.

- **Player** – Starting position on the game map. To change the setting, click the player number. The color of the player number corresponds to the color of the civilization.

- **Team** – Players who want to start the game as allies can select a team by clicking the **Team** number. A dash (-) in the **Team** box indicates no team. Players on the same team automatically have their diplomatic stance set to **Ally** and **Allied Victory** set. To change these settings during the game, click **Diplomacy** on the menu bar.

- **Number of Players** – In a single player game, your opponents are computer players.

4 If you want to change the scenario settings, click **Settings**. You can change the following settings:

- **Map Size** – (random map and death match only) The size of the map. The larger the map, the longer the game.

- **Map Type** – (random map and death match only) The distribution of land and water on the map.

- **Victory Condition** – The first civilization (or team) to achieve the victory condition wins the game. Some scenarios contain individual victory conditions, which cannot be changed.

- **Starting Age** – The age at which the game begins. For example, if the game

begins in the Bronze Age, the Bronze Age has just begun and all Stone Age and Tool Age technology has been completed. Nomad starts in the Stone Age and lets you choose where to build your Town Center. The default setting for a random map is Stone Age. To use the starting age a scenario was designed with, select **Default**.

- **Difficulty Level** – The skill of civilizations controlled by the computer. The levels range from easy to hardest.

- **Resources** – Determines the quantity of <u>resources</u> (food, wood, stone, gold) in each player's stockpile. The default setting for a random map is the lowest level of resources. To use the resource setting a scenario was designed with, select **Default**.

- **Fixed Positions** – Determines whether civilizations in a random map game begin the game in random positions on the map or in fixed (clockwise) positions based on their player number. Team members with consecutive player numbers are located adjacent to each other if you select **Fixed Positions**.

- **Full Tech Tree** – Allows all civilizations to research all technologies in the game. The special attributes usually associated with each <u>civilization</u> are removed.

- **Reveal Map** – Determines whether the map terrain is visible at the beginning of the game or revealed as you explore it.

5 Click **Start Game**.

Playing a campaign

A campaign is a predesigned series of related scenarios that chronicle the rise of one of the mighty civilizations of antiquity. You must play the scenarios in a campaign in sequence, using the settings and victory conditions with which each scenario was designed. New players should play the Ascent of Egypt learning campaign to learn the basics of Age of Empires.

You can create your own campaigns using the campaign editor.

To play a campaign

1 On the Age of Empires menu, click **Single Player**.

2 Click **Campaign**.

3 Type your player name, or click a player name in the **Name** list.

   To add a new name to the list, click **New**, and then type a name.

   To delete a name from the list, click the name to delete, and then click **Remove**.

4 Click **OK** to display the list of campaigns.

5 Select the campaign to play.

   The scenarios in the campaign are displayed in the **Select Scenario** list. If you have not previously played the campaign using your current player name, only the first scenario is displayed. After you complete a scenario, the next scenario in the campaign appears in the list.

6 If more than one scenario is listed, select the scenario you want to play.

7 Select the **Difficulty Level** (the skill of civilizations controlled by the computer). The levels range from easy to hardest.

8 Click **OK** to start the scenario.

   After the cinematic plays, the scenario instructions are revealed. To display the scenario instructions while you are playing the game, click the **Menu** button on the menu bar, and then click **Scenario Instructions**.

The map that appears before a campaign scenario shows the area where the current scenario takes place and the area(s) where previous scenarios in the campaign have taken place.

Playing a saved game

To play a saved game

1 On the Age of Empires menu, click **Single Player**, and then click **Saved Game**.
   -or-
   From within the game, click the **Menu** button on the menu bar, and then click **Load**.

2 Select the saved game to play, and then click **OK**.

Playing a multiplayer game

You can play a random map or scenario with up to eight players connected across a network or the Internet and two players across a modem or serial connection.

If you installed Age of Empires but do not have a disc, you can create and join multiplayer games. A multiplayer game requires the following number of discs per player: 2-3 players (1 disc); 4-6 players (2 discs); 7-8 players (3 discs). You must have an Age of Empires disc in your CD-ROM drive to play single player games or use the scenario builder. The player with the most powerful computer should host the game.

Two or more players can play a cooperative game in which they share control of a single civilization. Each player can give unrestricted (and even conflicting) orders to all units. To play a cooperative game, players must select the same player number before starting a multiplayer game.

If a player's connection is lost during a multiplayer game, the player cannot rejoin the game.

To select a multiplayer connection

1 On the Age of Empires menu, click **Multiplayer**.

2 Type your player **Name**.

3 Select the **Connection Type**. The connection types listed depend on the hardware, software, and services you are using. Common connection types include:

- **IPX Connection for DirectPlay** – Connect using a network that uses the IPX protocol. If you do not know which protocol your network uses, check with your network administrator.

- **Internet TCP/IP Connection for DirectPlay** – Connect using the Internet or a network that uses the TCP/IP protocol. If you do not know which protocol your network uses, check with your network administrator.

- **Modem Connection for DirectPlay** – Connect two computers using a modem. Age of Empires requires a modem speed of 28.8 Kbps or faster.

- **Serial Connection for DirectPlay** – Connect two computers using a null-modem cable.

- **Microsoft Internet Gaming Zone** – Selecting this option exits Age of Empires, launches your Web browser, and connects to Microsoft's Internet Gaming Zone. The Internet Gaming Zone is a quick and easy way to find other Age of Empires players. For information about creating and joining games on the Internet Gaming Zone, see the documentation provided on the Internet Gaming Zone.

4 Click **OK**, and then join or create a multiplayer game as explained in the following sections.

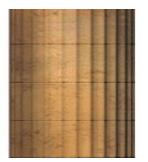## Joining a multiplayer game

To join a multiplayer game

1 Select a multiplayer connection, as explained in the previous section.

2 Click **Show Games** to update the list of multiplayer games.

3 Follow the instructions that appear on the screen for the connection type you are using.

   If you are making a TCP/IP connection across a Local Area Network, in most cases you can click OK instead of entering an IP address.

4 Select the game to join, and then click **Join**.

5 Select the player settings:

   • **Civ** – Each civilization has special skills and can research different technologies. More than one player can choose the same civilization.

   • **Player** – Starting position on the map and color of civilization. To change the setting, click the player number. To play a cooperative game, two or more players can select the same player number and share control of a single civilization. Each player can give unrestricted (and even conflicting) orders to all units.

   • **Team** – Players who want to start the game as allies can select a team by clicking the **Team** number. A dash (-) in the **Team** box indicates no team. Players on the same team automatically have their diplomatic stance set to **Ally** and **Allied Victory** set. To change these settings during the game, click **Diplomacy** on the menu bar.

6 The game creator controls the other game settings shown on the screen.

   You can discuss the game settings with the game creator and other players by typing in the **Chat** box. To send your message, press ENTER. To chat with other players during a game, press ENTER or click the **Chat** button on the menu bar.

7 When you are ready to begin the game, click **I'm Ready!** The names of players who are ready are shown in green. If you change your mind before the game starts, click the button again. The game does not begin until all players are ready and the creator starts it.

Creating a multiplayer game

To create a multiplayer game

1 Select a multiplayer connection, as explained at the beginning of this section.

2 Click **Create**.

3 Type a name for the game.

4 Follow the instructions that appear on the screen for the connection type you are using.

5 Select the player settings:

   • **Name** – If you want to limit the number of players that can join the game, close some of the positions. Closing a position that is filled by a player ejects the player from the game. **Open** indicates that the position is available for a human player. **Computer** indicates that the position is played by the computer. **Closed** indicates that position is not available.

- **Civ** – Select a civilization for yourself and each computer player. Human players choose their own civilization. Each <u>civilization</u> has special skills and can research different technologies. More than one player can choose the same civilization.

- **Player** – Starting position on the map and color of civilization. To change the setting, click the player number. To play a cooperative game, two or more players can select the same player number and share control of a single civilization. Each player can give unrestricted (and even conflicting) orders to all units.

- **Team** – Players who want to start the game as allies can select a team by clicking the **Team** number. A dash (-) in the **Team** box indicates no team. Players on the same team automatically have their <u>diplomatic stance</u> set to **Ally** and **Allied Victory** set. To change these settings during the game, click **Diplomacy** on the menu bar.

6 To display your IP address, click the **IP** button. Other players can type in your IP address to connect to your game.

7 Click **Settings** to select a game to play (random map, death match, or scenario). A list of scenarios appears showing the name and number of players for each scenario. Select the scenario to play. A description of the scenario appears in the **Scenario Instructions** window.

You can change the following settings:

- **Map Size** – (random map and death match only) The size of the map. The larger the map, the longer the game.

- **Map Type** – (random map and death match only) The distribution of land and water on the map.

- **Victory Condition** – The first civilization (or team) to achieve the <u>victory condition</u> wins the game. Some scenarios contain individual victory conditions, which cannot be changed.

- **Starting Age** – The <u>age</u> at which the game begins. For example, if the game begins in the Bronze Age, the Bronze Age has just begun and all Stone Age and Tool Age technology has been completed. Nomad starts in the Stone Age and lets you choose where to build your Town Center. The default setting for a random map is Stone Age. To use the starting age a scenario was designed with, select **Default**.

- **Difficulty Level** – The skill of civilizations controlled by the computer. The levels range from easy to hardest.

- **Resources** – The quantity of <u>resources</u> (food, wood, stone, gold) in each player's stockpile. The default setting for a random map is the lowest level of resources. To use the resource setting a scenario was designed with, select **Default**.

- **Enable Cheating** – Determines whether players can use the cheat codes.

- **Fixed Positions** – Determines whether civilizations in a random map game begin the game in random positions on the map or in fixed (clockwise) positions based on their player number. Team members with consecutive player numbers are located adjacent to each other if you select **Fixed Positions**.

- **Full Tech Tree** – Allows all civilizations to research all technologies in the game. The special attributes usually associated with each <u>civilization</u> are removed.

- **Reveal Map** – Determines whether the map terrain is visible at the beginning of the game or revealed as you explore it.

8 When you are finished changing the settings, click **I'm Ready!** so players know the game settings will not change. All players must click the **I'm Ready!** button

before you can click **Start Game**. The names of players who are ready are shown in green.

Hot keys

A list of hot keys is also provided on the Technology Tree Foldout.

Spacebar – View selected units.

CTRL+H – Select and view Town Center (repeat for other buildings of same type).

CTRL+B – Select and view Barracks.

CTRL+D – Select and view Dock.

CTRL+A – Select and view Archery Range.

CTRL+K – Select and view Siege Workshop.

CTRL+L – Select and view Stable.

CTRL+P – Select and view Temple.

CTRL+Y – Select and view Academy.

+ (Plus key) – Increase game speed.

- (Minus key) – Decrease game speed.

DELETE – Delete military unit or building.

ESC – Unselect or cancel.

ENTER – Send chat message.

Arrow Keys – Scroll game view.

CTRL+1-9 – Assign group number to units.

1-9 – Select group assigned to this number.

ALT+1-9 – Select and view group assigned to this number.

SHIFT+1-9 – Select this group in addition to currently selected units.

TAB – If multiple units are selected, display next unit in lower-left status box.

SHIFT+TAB – If multiple units are selected, display previous unit in lower-left status box.

F3, PAUSE – Pause.

F4 – Score display.

F10 – Game menu.

F1 – Help.

SHIFT+F1 – ? Help.

Changing the game settings

You can change the game speed, music volume, sound volume, screen size, mouse interface, and roll-over Help used in the game.

To change the game settings

1 Start a game.

2 Click the **Menu** button on the menu bar.

3 Click **Game Settings**. You can change the following settings:

- **Speed** – The higher the game speed, the faster villagers, military units, and boats move. Game time also elapses more quickly than "real time." Changing the game speed affects all civilizations.

- **Music Volume** – Move the slider down to decrease the music volume.

- **Sound Volume** – Move the slider down to decrease the volume of sound effects.

- **Screen Size** – The default screen size is **800 x 600**.

- **Mouse Interface** – The default setting is **Two Buttons**, which means that the left mouse button is used to select a unit, and the right mouse button is used to execute a command.

  For example, to instruct a villager to hunt using **Two Buttons**, you would left-click the villager and then right-click the animal to hunt. To instruct a villager to hunt using **One Button**, you would left-click the villager and then left-click the animal to hunt.

- **Roll-over Help** – The default setting is **On**, which displays tips on the status line when you move the cursor over items such as trees, foraging sites, buildings, etc.

Using the scenario builder

The scenario builder lets you create randomly generated or custom maps for up to eight players.

To use the scenario builder

1 On the Age of Empires menu, click **Scenario Builder**.

2 To create a scenario, click **Create Scenario**.

   To edit a scenario, click **Edit Scenario**, and then select the scenario to edit.

3 You can use the scenario builder to:

   • <u>Customize the map</u> – Create randomly generated or custom maps.

   • <u>Customize the terrain</u> – Place resources, elevation, cliffs, forests, and water.

   • <u>Customize the players</u> – Choose the starting age, starting stockpiles, civilization, starting technology, and computer personality for each player, as well as world (Gaia) objects such as trees, resources, Artifacts, Discoveries, Ruins, and terrain accents such as bones, grass clumps, etc.

   • <u>Customize the units</u> – Place buildings, villagers, military units, and boats for each player.

   • <u>Customize diplomacy</u> – Choose the diplomatic stance of players (ally, neutral, or enemy) and whether any players pursue allied victory.

   • <u>Customize the global victory conditions</u> – Choose one or more victory conditions that all players must achieve.

   • <u>Customize the individual victory conditions</u> – Choose unique victory conditions for each player.

   • <u>Customize the options</u> – Enable the full tech tree or disable technology for each player.

   • <u>Customize the messages</u> – Write scenario instructions, hints, a victory message, a loss message, and historical information.

   • <u>Customize the cinematics</u> – Choose the cinematics that play at the beginning and end of the scenario.

4 To begin playing your customized scenario, click **Menu**, and then click **Test**. This option lets you play through the scenario you have created or edited without leaving the scenario builder. To return to the scenario builder after testing your scenario, click **Menu**, and then click **Quit Game**.

   To save the scenario, click **Menu**, and then click **Save** or **Save As**.

Customizing the map

You can create randomly generated or custom maps.

To customize the map

1 In the scenario builder, click **Map**.

2 Select the **Map**:

- **Blank Map** displays the default <u>terrain</u>, with no resources (food, wood, stone, or gold). If you select **Blank Map**, select the **Default Terrain** (the map background).

- **Random Map** displays a random distribution of land, water, and resources. If you select **Random Map**, select the **Map Type** (the distribution of water and land).

- **Seed Map** displays a random distribution of land, water, and resources based on the seed (number) you type. For example, if you type 532, and select the same number of players, map size, and map type, the same map always appears. If you select **Seed Map**, select the **Map Type** (the distribution of water and land) and type the **Seed** number. You can type any five-digit number up to 99999.

3 Select the **Map Size**. The larger the map, the longer the game.

4 Click **Generate Map** to display the map.

Customizing terrain

You can fine-tune the map terrain, including elevation and cliffs.

To customize the terrain

1 In the scenario builder, click **Terrain**.

2 Select the **Brush Type**:

- **Map** lets you paint background <u>terrain</u> (grass, forest, water, etc.). If you select **Map**, select the **Terrain** to paint and the **Brush Size** (area to paint).

- **Elevation** lets you paint hills. If you select **Elevation**, select the elevation to paint and the **Brush Size** (area to paint). The larger the elevation number, the higher the elevation. Water can only be painted on flat terrain

- **Cliffs** lets you paint <u>cliffs.</u> Cliffs should only be placed on flat terrain. Placing cliffs on different elevations creates gaps between the cliffs that villagers and military units may have difficulty moving through. If you place cliffs on different elevations, level the terrain after you have placed the cliffs.

3 To paint a single area of terrain or elevation, click a location on the map. To paint cliffs or a large area of terrain or elevation, drag the mouse. To delete cliffs, right-click and drag the mouse over existing cliffs.
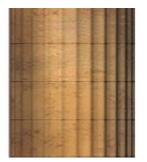
Customizing the players

You can choose the number of players, starting age, starting stockpiles, civilization, starting technology, and computer personality for each player.

To customize the players

1 In the scenario builder, click **Players**.

2 Select the **Number of Players**.

3 Select the player number to customize.

4 Select the player's **Starting Age**.

   The player starts the game at the beginning of the selected age, with all technology research in the previous age(s) completed. For example, if the starting age is **Bronze Age**, all Stone Age and Tool Age technologies are complete. If the starting age is **Post-Iron Age**, the player starts at the end of the Iron Age, with all Stone, Tool, Bronze, and Iron Age research complete.

5 Type the amount of **Food**, **Stone**, **Wood**, and **Gold** the player has at the beginning of the game.

6 If you want to replace the civilization name with a unique name, type a **Tribe Name**. The tribe name replaces the civilization name only when the scenario is played as part of a campaign.

7 Select the **Player Type**. If you select **Computer**, the position is played by the computer. If you select **Either**, the position can be played by a human or by the computer (if it is not filled by a human).

8 Select the player's **Civilization**. Each civilization has special skills and can research different technologies. More than one player can choose the same civilization.

9 Select the **City Plan** – Where on the map the computer constructs each building. To let the computer design its own city plan, select **Default**. Advanced players can customize the city plans by using a text editor to edit the .cty files in the Data folder where Age of Empires is installed. The city plan (.cty file) you want to include in your scenario must be located in the Data folder where Age of Empires is installed.

10   Select the **Strategy** – Which buildings, military units, boats, and technologies the computer builds. You must select a strategy for each player.

   The name of the strategies indicates the primary unit the computer player uses to attack and the age in which the attack occurs. For example, Archers Bronze indicates that the computer player attacks with archers in the Bronze Age. For more information about the strategies, refer to the Strattyp.doc file in the Docs folder on the Age of Empires disc.
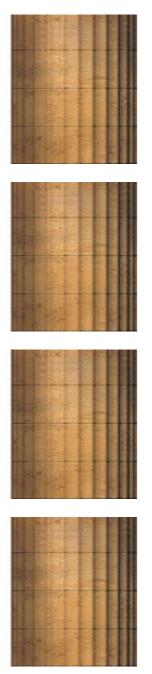
   Advanced players can customize the strategy by using a text editor to edit the .ai files in the Data folder where Age of Empires is installed. The content of

the .ai files is explained in the Stratsmp.doc file in the Docs folder on the Age of Empires disc. The strategy (.ai file) you want to include in your scenario must be located in the Data folder where Age of Empires is installed.

11 Select the **Personality** of the computer player. For most situations, you can choose **Aggressive or Passive**.

Advanced players can customize the personality files by using a text editor to edit the .per files in the Data folder where Age of Empires is installed. The content of the .per files is explained in the Persnlty.doc file in the Docs folder on the Age of Empires disc. The personality (.per file) you want to include in your scenario must be located in the Data folder where Age of Empires is installed.

Customizing the units

You can place buildings, villagers, military units, and boats for each player, as well as world (Gaia) objects such as trees, resources, Artifacts, Discoveries, Ruins, and terrain accents such as bones, grass clumps, etc.

If you do not place any units on the map for a particular player, a Town Center and three villagers appear in a random location on the map at the beginning of the game each time you play the scenario.

To customize units

1 In the scenario builder, click **Units**.

2 To place buildings, villagers, military units, and boats for a particular player, select or type the player number.

   To place world objects that are not associated with a particular player, click **Gaia** or press **0**.

3 To place an item on the map, click **Place**, click an item in the list box, and then click a location on the map. The item appears in red if you are not allowed to place it in a location, such as on top of another item.

   To delete an item on the map, click **Delete**, and then click the item to delete.

   To move an item on the map, click **Move**, click the item to move, and then drag it to a new location.

   To rotate a villager, military unit, or boat, click **Rotate**, and then click the unit to rotate. Right-click to rotate in the opposite direction. You cannot rotate buildings or other immobile objects.

   To select all objects so you can see how much space they occupy, press **CTRL+A**.

Customizing diplomacy

You can determine the diplomatic stance of players (ally, neutral, or enemy) and choose whether any players pursue allied victory.

To customize diplomacy

1 In the scenario builder, click **Diplomacy**.

2 Select the player to customize.

3 Select the player's diplomatic stance toward each of the other players:

- **Ally** – The player's military units do not attack other players' buildings, villagers, military units, or boats.

- **Neutral** – The player's military units attack all buildings and military units (but not villagers) who enter their sight. Your military units will attack Priests from other civilizations.

- **Enemy** – The player's military units (except Scouts) attack all buildings, military units, and villagers who enter their sight.

4 Select whether any players pursue an allied victory. For allied victory, any player who achieves the victory condition wins the game for all mutually allied players.

Customizing the global victory conditions

Global victory conditions apply to all players. A scenario can have more than one global victory condition, in which case you must specify whether players must achieve one or all of the global victory conditions to win the game. For allied victory, all allies must work as a team to achieve their global victory condition(s).

In addition to global victory conditions, you can also assign individual victory conditions to each player

To customize the global victory conditions

1 In the scenario builder, click **Global Victory**.

2 Click the victory condition(s) that players must achieve to win the game.

- **Standard** – The game is won by the standard victory conditions (Conquest, Wonders, Artifacts, or Ruins).

- **Conquest** – The first civilization (or team) to destroy all opponents' villagers, military units, boats, and buildings   wins the game. You do not need to destroy trade vessels, transport vessels, fishing vessels, Artifacts, Ruins, or walls.

- **Score** – The game is won by the first civilization (or team) to achieve the specified score. Wonders, Artifacts, and Ruins add points to your score.

- **Time Limit** – The game is won by the civilization (or team) to achieve the highest score within the specified time.

- **Custom** – Choose your own victory condition(s):

  Conquest –The first civilization (or team) to destroy all opponents' villagers, military units, boats, and buildings wins the game. You do not need to destroy trade vessels, transport vessels, fishing vessels, Artifacts, Ruins, or walls.

  Exploration – The first civilization (or team) to explore the specified percentage of the map wins the game. For allied victory only one of the allies must explore the specified percentage of the map.

  Ruins – The first civilization (or team) to control the designated number of Ruins wins the game. The game ends immediately. There is no countdown clock. An allied victory is achieved when the Ruins are owned by any of the allies.

  Artifacts – The first civilization (or team) to control the designated number of Artifacts wins the game. The game ends immediately. There is no countdown clock. An allied victory is achieved when the Artifacts are owned by any of the allies.

  Discoveries – The first civilization (or team) to locate the specified number of Discoveries wins the game. Discoveries are natural sites of significance represented by a white horse etched into the ground. Discoveries only appear in a scenario when they are a possible victory condition. To locate the Discovery, move a unit near it. A colored flag indicates which civilizations have located the Discovery. More than one civilization can locate a Discovery. For allied victory,

all allies must locate all Discoveries.

3 To allow players to achieve any one of the victory conditions you selected, click **Any One**. To require players to achieve all of the victory conditions you selected, click **All**.

Customizing the individual victory conditions

Individual victory conditions let you create highly customized scenarios with up to twelve unique victory conditions for each player. Individual victory conditions are not required for a scenario. If used, they can be assigned in addition to or instead of global victory conditions. If a scenario contains individual victory conditions, players cannot change the victory condition in the settings screen that appears before starting a scenario.

In addition to the possibility of a scenario having both individual and global victory conditions, a player can be allied with other players who have the same or different victory conditions. In these cases, the game is won as follows:

- **Individual victory conditions** – If a scenario includes only individual victory conditions (no global victory conditions), players must achieve all of their individual victory conditions to win the game. For example, if a player has three individual victory conditions, he must achieve all three of them to win the game. For allied victory, all allies must achieve their individual victory condition(s) to win the game.

- **Individual and global victory conditions** – If a scenario contains both individual victory conditions and global victory conditions, players can achieve their individual victory condition(s) OR the global victory condition(s) to win the game. For allied victory, allies can achieve the global victory condition(s) OR all allies can achieve all of their individual victory condition(s) to win the game.

To customize the individual victory conditions

1 In the scenario builder, click **Individual Victory**.

2 Select the player to customize.

3 Click the button of the **Victory Condition** to set. For example, to set the first victory condition, click button **1**. You can assign one victory condition to each button (up to 12 victory conditions to each player).

4 Select the victory condition:

- **None**
  Sets no individual victory conditions.

- **Bring Object to Object**
  To specify the object to bring, click **Set Object**, and then click a mobile unit (military unit, Artifact, etc.) on the map. To specify the destination, click **Set Destination**, and then click a unit (building, Ruins, etc.) on the map.

- **Bring Object to Area**
  To specify the object to bring, click **Set Object**, and then click a mobile unit (military unit, Artifact, etc.) on the map. To specify the destination, click **Set Destination**, and then click an area on the map or click and drag to draw an area box. To display the area, click **Go to Destination**. To indicate which area players must bring the object to, you can place flags or other objects there.

- **Create # of Objects**
  To specify the object to create, select a unit from the list box. To specify the number of units to create, type a number in the **Quantity** box.

- **Create Objects in Area**
  To specify the object to create, select a unit from the list box. To specify the number of units to create, type a number in the **Quantity** box. To specify the destination, click **Set Destination**, and then click an area on the map or click and drag to draw an area box. To display the area, click **Go to Destination**. To indicate which area players must create an object in, you can place flags or other objects there.

- **Destroy # of Objects**
  To specify the object to destroy, select a unit from the list box. To specify the number of units to destroy, type a number in the **Quantity** box. To select whose units to destroy, select **Which Player**.

- **Destroy Specific Object**
  To specify the object to destroy, click **Set Object**, and then click an object on the map.

- **Destroy All Objects**
  To specify the object to destroy, select a unit from the list box. To specify whose unit to destroy, select **Which Player**.

- **Destroy Player**
  Select **Which Player** to destroy.

- **Capture an Object**
  To specify the object to capture, click **Set Object**, and then click an object on the map. You capture an object by ordering a Priest to convert it.

- **Gold Stockpile**
  To specify the amount of gold to gather, type a number in the **Quantity** box.

- **Food Stockpile**
  To specify the amount of food to gather, type a number in the **Quantity** box.

- **Wood Stockpile**
  To specify the amount of wood to gather, type a number in the **Quantity** box.

- **Stone Stockpile**
  To specify the amount of stone to gather, type a number in the **Quantity** box.

- **Population**
  To specify the population, type a number in the **Quantity** box. Population includes all units (villagers, military units, and boats).

- **Age**
  Click the age to research. For example, **Bronze Age** indicates that you must advance to the Bronze Age.

- **Exploration**
  To specify the percentage of the map to explore, type a number in the **Quantity** box.

- **Technologies**
  Select the technology to achieve.

- **Other Attributes**
  Select the attribute to achieve:

  Razings – Specify the number of enemy buildings that must be destroyed.

  Conversions – Specify the number of villagers, military units, buildings, or boats that must be converted by Priests.

Kill Ratio – Specify the number of villagers, military units, and boats that must be killed compared to those that are lost. For example, a **Kill Ratio** of 10 indicates that a player must have 10 more kills than losses.

Wonders – Specify the number of <u>Wonders</u> that must be built and held.

Military Population – Specify the number of military units that must be created.

Technologies – Specify the number of technology nodes that must be researched.

Villager Population – Specify the number of villagers that must be created.

Kills – Specify the number of villagers, military units, or boats that must be killed (buildings are not included).

5 Buttons that have been assigned a victory condition display an asterisk. To view, edit, or delete an assigned victory condition, click the numbered button. For example, to edit the victory condition assigned to button 2, click **2** and then select a different victory condition or **None** to delete the victory condition.

Customizing the options

You can determine whether the full technology tree is used.

To customize the options

1 In the scenario builder, click **Options**.

2 To allow all civilizations to research all technologies in the game and to remove the special attributes usually associated with each civilization, click **Full Tech Tree**.

3 To **Disable Technology** for a particular player, select the player, and then click the technology buildings or ages to disable.
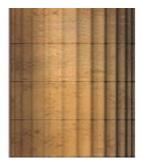
Customizing the messages

You can customize the scenario instructions, hints, victory message, loss message, and historical description.

To customize the message

1 In the scenario builder, click **Messages**.

2 Click the type of message to create/edit:

- **Scenario Instructions** – Displayed before the scenario begins to describe what players must do to win the game. If the scenario includes custom global victory conditions or individual victory conditions, you must provide scenario instructions so the players know which victory conditions to achieve.

- **Hints** – Provides information about how to win the game. To display the Hints, click the **Hints** button at the bottom of the Scenario Instructions screen. Hints are not required for a scenario.

  - **Victory** – Displayed for the winner(s) of the scenario. A victory message is not required for a scenario.

  - **Loss** – Displayed for the loser(s) of the scenario. A loss message is not required for a scenario.

  - **History** – Provides historical background information about the scenario. To display the History text, click the **History** button at the bottom of the Scenario Instructions screen. History text is not required for a scenario.

  To display the scenario instructions, hints, and history while you are playing the game, click the **Menu** button on the menu bar, and then click **Scenario Instructions**.

3 Type the message text in the box. Right-click to copy, cut, paste, etc.

Customizing the cinematics

You can choose the cinematics that play at the beginning and end of a scenario. The cinematics (.avi files) you want to include in your campaign must be in .avi format and located in the Avi folder where Age of Empires is installed.

To customize the cinematics

1 In the scenario builder, click **Cinematics**.

2 Select the cinematic to customize:

- **Pre-Game Cinematic** – Plays before a scenario begins.
- **Victory Cinematic** – Plays for the winner(s) of the scenario.
- **Loss Cinematic** – Plays for the loser(s) of the scenario.
- **Scenario Instruction Map** – Type the filename of the map bitmap that should appear when the player starts the scenario. The maps (.bmp files) you want to include in your campaign must be located in the folder that contains the file Empires.exe. You can create your own map by editing (and saving with a new name) the Mapdefault.bmp file located in the folder that contains Empires.exe. You must not change the color palette provided with this file.

USING THE
INTERFACE

SINGLE
PLAYER

MULTIPLAYER

HOT KEYS

GAME
SETTINGS

SCENARIO
BUILDER

CAMPAIGN
EDITOR

Using the campaign editor

The campaign editor lets you create your own campaigns by combining scenarios into a custom campaign that you can distribute to other players.

Before you can create a campaign, you must have the following files:

- The scenarios (.scn files) you want to include in your campaign must be located in the Scenario folder where Age of Empires is installed. You can create custom scenarios with the scenario builder.

- (optional) The maps (.bmp files) you want to include in your campaign must be located in the folder that contains the Empires.exe file. The scenario builder lets you import custom maps.

- (optional) The cinematics (.avi files) you want to include in your campaign must be located in the Avi folder where Age of Empires is installed. The scenario builder lets you import custom cinematics.

- The strategy (.ai files) you want to include in your campaign must be located in the Data folder where Age of Empires is installed. The scenario builder lets you use custom strategy files.

- The personality (.per files) you want to include in your campaign must be located in the Data folder where Age of Empires is installed. The scenario builder lets you use custom personality files.

To use the campaign editor

1 On the Age of Empires menu, click **Scenario Builder**.

2 Click **Campaign Editor**.

3 In the **Campaign Filename** list, click the name of the file to edit, or type the name of the campaign to create.

4 To add a scenario to the campaign, select the name of a scenario in the **Scenarios** list, and then click **Add**. The scenario appears in the **Campaign Scenarios** list. The scenarios will be played in the order that they appear in the list.

To remove a scenario from the campaign, select the name of the scenario in the **Campaign Scenarios** list, and then click **Remove**.

5 To save the changes to the campaign, click **Save**.

The campaign editor creates a campaign (.cpn) file located in the Campaign folder where Age of Empires is installed. To distribute the campaign to other players, you must provide them with the campaign (.cpn) file you created as well as the cinematics (.avi) files (if any) for each scenario in the campaign.

If you edit a scenario within an existing campaign, you must remove the previous version of the scenario and add the updated scenario to the campaign.

OVERVIEW • GAMEPLAY • CIVILIZATION • UNITS • COMBAT
MOVEMENT • TECHNOLOGY • HISTORY • TROUBLESHOOTING

EXPLORING

GROUPING
UNITS

MOVING
UNITS

TRANSPORTING
UNITS

TERRAIN

EXPLORING

GROUPING UNITS

MOVING UNITS

TRANSPORTING UNITS

TERRAIN

Exploring

As the great ice sheets receded, humans followed in their wake, exploring and settling newly uncovered lands modified by the changing climate. The world changed dramatically in a short period. Human populations multiplied, coalesced into groups, and began competing among each other, rather than with other species, for the best food and resources. The foundations of the first great civilizations were laid in some part by those groups that found and controlled the best areas. Discovery and control of the Nile, Tigris, and Euphrates River valleys determined which of the wandering tribes in those regions would become Egypt, Sumeria, and Babylonia.

At the start of a typical Age of Empires game, exploration is vital. Sources of food and wood need to be found quickly. Artifacts and Ruins that are nearby should be controlled. Nearby geography may suggest where defenses should be built to stave off potential attackers. More distant resources should be noted for your eventual expansion. And learning the location of enemies helps you plan your attacks.

Unexplored areas of the map are black. Moving a villager, military unit, or boat into a black area reveals the map. You cannot explore beyond the edge of the map. Enemy buildings and walls are not visible until you explore the area of the map where they are located. Once an area has been explored, buildings and walls remain visible. However, changes to the buildings, such as age upgrades, damage, and destruction are not visible unless the building or wall is within the sight of a villager, military unit, or boat from your civilization. Enemy villagers, military units, and boats are only visible when they attack or are within the sight of a unit from your civilization.

Researching Writing lets allies share exploration.

EXPLORING

GROUPING
UNITS

MOVING
UNITS

TRANSPORTING
UNITS

TERRAIN

Moving villagers, military units, and boats

How quickly villagers, military units, and boats move depends on the speed of the unit and the game speed.

Researching the Wheel increases the speed of villagers, Polytheism increases the speed of Priests, and Aristocracy increases the speed of Academy units.

Units near each other move in formation unless they are ordered to move to or attack an object, in which case they converge on the object. You can use waypoints to make units follow a defined path to their goal.

To move a villager, military unit, or boat

Click a villager, military unit, or boat (or select a group), and then right-click a location.

To move a villager, military unit, or boat using waypoints

1 Click a villager, military unit, or boat (or select a group).

2 Press SHIFT, and then right-click each point along the path. A waypoint marker appears.

3 Release the SHIFT key, and then right-click the last point in the path. The unit or group moves along the path you created.

EXPLORING

GROUPING
UNITS

MOVING
UNITS

TRANSPORTING
UNITS

TERRAIN

Grouping villagers, military units, and boats

Grouping lets you command several villagers, military units, or boats at the same time.

To select a group

Drag the pointer over the <u>villagers</u>, <u>military units</u>, or <u>boats</u> you want to group. Or hold down the CTRL key and click each unit.

To create a group
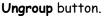
Select a group (as described above), then click the **Group** button. When you click one member of the group, the other members are also selected.

To ungroup units

Click a member of the group, and then click the **Ungroup** button.

To assign a number to a group

1 Select a group.

2 Press CTRL and the number to assign to the group. For example, to assign the number 2 to a group, press CTRL+2. The number appears in the lower-left corner of each unit in the group.

3 To select the group, press the number assigned to it. For example, to select group 2, press the 2 key.
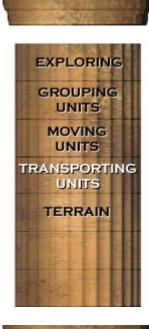
Transporting units across water
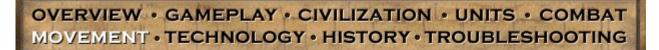
Villagers, military units, and Artifacts can be loaded aboard a transport vessel and moved across water. Allied units can also be transported. Each transport vessel can carry a limited number of villagers, military units, and Artifacts in each trip.

To load a transport vessel

1 Build a Light Transport or Heavy Transport at the Dock.
2 Click a villager, military unit, or Artifact (or select a group), and then right-click the transport vessel to load. The units are loaded onto the transport.

To unload a transport vessel

1 Click the transport vessel.
2 Click the **Unload** button.
3 Click a location on shore or in shallows.

Terrain

Terrain provides <u>resources</u> and has tactical or strategic uses in combat. The types of terrain include:
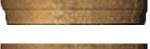
- **Water** – Impassable to villagers and military units.
- **Shallows** – Water that is passable to villagers, military units, and boats.
- **Forest** – Impassable to villagers and military units.
- **Cliff** – Impassable to villagers and military units. Provides a 25 percent chance that the attacking unit will cause triple damage on each hit when the target is on the low side of the cliff.
- **Elevation** – Provides a 25 percent chance that the attacking unit will cause triple damage on each hit when the target is at a lower elevation.

Gathering resources

Stone Age humans obtained the basic necessities of life (food, shelter, and clothing) by gathering food and raw materials or by killing animals. Providing the basics of life was a full-time job. Native Americans on the northern plains, for example, had several hundred different uses for parts of a slain buffalo. We can presume that Siberian hunters made similarly extensive use of slain woolly mammoths.

Advances in Stone Age tools and techniques gradually improved the lot of humans by making it easier to acquire resources (better weapons and skills), to make more efficient use of them (better tools), and to make it easier to store them (pottery, drying, salting) for later use. The advent of animal domestication and agriculture increased the rate of technological innovation by reducing the time needed for providing basics. Some of the new-found leisure time was spent developing even more innovations that led in turn to food surpluses, more efficient techniques, more leisure, and more innovation.

In Age of Empires, the four resources of food, wood, stone, and gold are the building blocks of your civilization. Stockpiles of these items are converted into buildings and people. Most importantly, resources are expended to advance to new technological ages and achieve new technology. The use of these resources represents the costs in time and innovation required to take an important step forward.

The resources in your stockpile are used to create villagers, train and upgrade military units and boats, construct buildings, research technologies, and advance through the ages. Villagers increase your stockpile of resources by performing tasks, such as farming, fishing, hunting, etc. You can also increase your stockpile by trading and by receiving tribute from other civilizations.

The resources in your stockpile are shown in the upper-left corner of the game screen. They include:

- **Wood** – Used to construct buildings, boats, and some military units. You increase your stockpile of wood by assigning villagers to chop trees.

- **Food** – Used to create villagers, train and upgrade military units, research technologies, and advance to the next age. You increase your stockpile of food by assigning villagers to hunt, forage, farm, and fish. Fishing Boats and Fishing Ships also fish for food. Berry bushes represent foraging sites, where ancient man collected fruits, nuts, roots, and wild grains.

- **Gold** – Used to research technologies in later ages, create some military units, advance to the Iron Age, and pay tribute to other civilizations. You increase your stockpile of gold by trading with other civilizations and by assigning villagers to collect gold from gold mines. In Age of Empires, gold represents all types of precious metals, including gold, silver, bronze, and copper.

- **Stone** – Used to build and upgrade towers and walls and research some technologies. You increase your stockpile of stone by assigning villagers to collect

stone from stone mines. In Age of Empires, stone represents both stone and clay.

To display the resources at a work site

Click the work site. For example, to display the amount of gold a gold mine contains, click the gold mine. The quantity of resources is displayed in the status box in the lower-left corner of the game screen.

Sources of food, wood, stone, and gold are depleted as the resources are gathered. For example, when a stone mine is depleted, it disappears.

Researching <u>Coinage</u> increases gold mine production. <u>Domestication</u>, the <u>Plow</u>, and <u>Irrigation</u> increase Farm production.

Villager tasks

Villagers perform a variety of tasks, including constructing and repairing buildings and increasing your stockpile of resources by hunting, chopping wood, mining, etc. Researching the Wheel increases the speed of villagers.

Villagers perform the following tasks:

- **Builder** – Constructs buildings.
- **Farmer** – Gathers food from a Farm. Food from farming is deposited at the Town Center or Granary, whichever is closer. Researching Domestication, the Plow, and Irrigation increases Farm production.
- **Fisherman** – Gathers food from fishing sites (jumping fish) near the shore in streams and oceans. Food from fishing is deposited at the Town Center or Storage Pit, whichever is closer. Fishing Boats and Fishing Ships also fish for food, which they deposit at the Dock.
- **Forager** – Gathers food from foraging sites (berry bushes). Food from foraging is deposited at the Town Center or Granary, whichever is closer.
- **Gold Miner** – Gathers gold from gold mines. Gold is deposited at the Town Center or Storage Pit, whichever is closer. Researching Gold Mining increases gold mining efficiency, and Coinage increases gold mine production.
- **Hunter** – Kills wild game (gazelles, elephants, lions, and alligators) for food. Food from hunting is deposited at the Town Center or Storage Pit, whichever is closer. Military units can also kill animals, but food cannot be gathered from the carcass.
- **Repairman** – Repairs buildings and boats damaged in combat.
- **Stone Miner** – Gathers stone from stone mines. Stone is deposited at the Town Center or Storage Pit, whichever is closer. Researching Stone Mining and Siegecraft increases stone mining efficiency.
- **Villager** – Engaged in combat or not assigned a task. Researching Siegecraft allows villagers to destroy walls and towers, and Jihad increases their combat ability.
- **Woodcutter** – Chops trees for wood. Wood is deposited at the Town Center or Storage Pit, whichever is closer. Researching Woodworking, Artisanship, and Craftsmanship increases woodcutting efficiency.

To assign a villager a task

1 Click a villager.

2 Right-click a work site. For example, to assign a villager to mine for gold, right-click a gold mine.

The villager goes to the work site, gathers as much of the resource as he can carry, and deposits it at the Town Center, Granary, or Storage Pit (where it is added to your stockpile), and returns to the work site to gather more. Fishing Boats and Fishing Ships deposit food at the Dock.

The villager continues to perform a task until you assign a different task or until the resource is depleted. If a resource is depleted, he searches for a new work site of the same type within his sight and continues working. If the villager does not find a new work site, he becomes idle.

Creating villagers, military units, and boats

With new techniques and an improving tool kit, humans were able to expand into more demanding climates as the ice age ended. As humans spread and adapted, the need arose for better shelter from the elements as the seasons changed. Where natural caves and other sources of shelter did not exist, humans improvised. In ancient Russia, for example, large multifamily dwellings were framed with mammoth bones and covered with mammoth skins. As humans became more agricultural and sedentary, shelter became more elaborate and long-lasting.

Creating villagers, military units, and boats costs resources (food, wood, stone, and gold). You must also have enough Houses to build a new villager, military unit, or boat (one House supports four units). The Town Center also supports four units. If a House is destroyed, you do not lose the units it supported, but you must build new housing to support any new units.

Each civilization can support up to 50 villagers, military units, or boats.

To create a villager

1 Click the Town Center.

2 Click the **Create Villager** button.

  After a brief training period, the villager appears beside the Town Center.

To train a military unit

1 Build a Barracks, Archery Range, Stable, Siege Workshop, Academy, or Temple.

2 Click the building.

3 Click the button of the military unit to train. For example, to train a Clubman (at the Barracks), click the **Train Clubman** button.

  After a brief training period, the military unit appears beside the building.
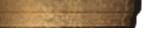
To build a boat

1 Build a Dock.

2 Click the Dock.

3 Click the button of the boat to build. For example, to build a Fishing Boat, click the **Build Fishing Boat** button.

  After a brief training period, the boat appears beside the Dock.

To delete a villager, military unit, building, or boat

Click a unit that belongs to your civilization, and then press the DELETE key.

You can delete your own units and buildings at any time. If you delete a building while it is under construction, 50 percent of the resources from the unbuilt portion of the building are returned to your stockpile. For example, a Storage Pit costs 120

wood. If you delete a Storage Pit immediately after you begin building it, 60 wood is returned to your stockpile. If you delete a Storage Pit after it is half built, 30 wood is returned to your stockpile.

Constructing buildings

Constructing buildings costs wood or stone. You can build more than one of each building. For example, you might build two Town Centers or three Barracks. To display all of the buildings you can construct, you must click the arrow button to the right of the building icons at the bottom of the game screen.

There are two types of buildings:

- Technology buildings, such as the Barracks, let you create new military units, upgrade military units, and research technologies.
- Non-technology buildings, such as walls and Farms, provide a benefit to your civilization but do not let you research new military units or technologies.

As you advance through the ages, the appearance of each building evolves and new military units, upgrades, technologies, and buildings become available. Allied civilizations cannot help each other construct buildings.

Researching Architecture increases the hit points and decreases the construction time of buildings and walls.

To construct a building

1 Click a villager (or select a group). The more villagers assigned to a building, the faster it is built.

2 Click the **Build** button.

3 Click the button of the building to build. For example, to build a House, click the **Build House** button. To display more buildings, click the arrow button to the right of the building icons.

4 Click a location on the map. The building is shown in red if you cannot build in a particular location.

-or-

If you want to build more than one of the same building, press SHIFT, and then click multiple locations on the map. To build multiple walls, click a location and drag the pointer where you want to build walls.

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Repairing buildings and boats

Damaged buildings and boats catch fire. They can be repaired to full strength by villagers. Repairing buildings and boats requires resources. Destroyed buildings are reduced to rubble and eventually disappear. Destroyed boats sink. You can repair the buildings of allied civilizations. The cost of the repair is deducted from the civilization that owns the building.

To repair a building or boat

1 Click a villager (or select a group of villagers). The more villagers assigned to a building or boat, the faster it is repaired.

2 Right-click the building or boat to repair.

To repair a transport vessel

1 Click a villager (or select a group of villagers).

2 Click the **Repair** button, and then click the Light Transport or Heavy Transport to repair.

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Trading with other civilizations

Trading lets you exchange the food, wood, and stone in your stockpile for gold. You trade with other civilizations by establishing trade routes to and from foreign Docks. Trade Boats and Merchant Ships travel to foreign Docks with a cargo of trade goods (20 food, wood, or stone), exchange the trade goods for gold, and return to your Dock to deposit the gold. The farther you travel to the foreign Dock, the more valuable your cargo and the more gold you receive. Trade vessels can carry a maximum of 20 trade goods. If the stockpile of resources you are trading drops to zero, the trade vessel becomes idle. Trading has no effect on the player you are trading with. The resources you drop off and the gold you receive are not added to or deducted from the other civilization's stockpile.

To trade with another civilization

1 Click a Trade Boat or Merchant Ship.

2 Click the button at the bottom of the game screen that corresponds to the resource you want the vessel to carry (food, wood, or stone). The resource you select is automatically deducted from your stockpile each time the vessel returns.

3 Right-click the Dock to trade with.

To display a vessel's cargo

Click a Trade Boat or Merchant Ship. The cargo it carries is displayed in the status box in the lower-left corner of the game screen.

To display the gold paid at a Dock

Click the Dock. The amount of gold you receive for your trade goods is displayed in the status box in the lower-left corner of the game screen (shown as the amount of gold/cost).

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About technology

In the span of time represented by Age of Empires (roughly 12,000 BC to 500 AD), humans advanced from being just one of the animals roaming the land (albeit the most dangerous) to being the dominant species on Earth. This ascendance occurred because of human intelligence and the harnessing of technology by that intelligence. A naked human with no tools or weapons was at a great disadvantage in the post-Ice Age wilderness. But a group of humans, working together, well-armed and equipped (for the time), carrying in their heads the shared wisdom of their ancestors passed down orally for generations, was a competitive force of awesome power. Paleontologists believe, for example, that small bands of big game hunters spread south from what is now Canada to the tip of South America in about 1000 years, hunting to extinction 31 genera of big game herbivores (mammoth, mastodon, giant beaver, giant sloth, horse, a variety of camels, and others).

Technology was the underlying dynamic for the rise of civilization throughout the period covered by Age of Empires. Those cultures that learned a key new technology first often had an advantage over their neighbors. Technology was often the key factor in survival, expansion, and longevity. Egypt and Mesopotamia grew strong early, once they mastered irrigation. The Minoans established a monopoly on sea trade and grew rich. The Greeks expanded on the basis of trade, mining, and a culture that encouraged and rewarded original thought. The Hittites mastered metalworking and fielded well-equipped armies. The Assyrians, surrounded by enemies, forged a powerful and innovative army out of necessity.

New buildings, military units, and technologies become available as you build technology buildings and advance through the ages. The Technology Tree Foldout shows all of the technology paths you can pursue in Age of Empires. The technologies available to you depend on the civilization you are playing. The technology trees for each civilization are in the Appendix of the Age of Empires manual and in the Docs folder on the Age of Empires disc.

Advancing through the ages

Historians have divided the story of human development into a number of ages for reference. Age of Empires covers roughly four periods—the end of the old Stone Age (or Paleolithic period), the Tool Age (or Neolithic period), the Bronze Age, and the beginnings of the Iron Age. These periods are named after the predominant tool and weapon material. Stone Age tools were large stone choppers and spear points. Tool Age tools were small stone blades, called microliths, struck from stone core. The small blades were fixed into hafts to make scythes, knives, and others specialized tools. The Bronze Age was dominated by tools and weapons made of bronze metal, an alloy usually of copper and tin. The Iron Age was dominated by tools and weapons of iron.

Tools and other technologies were cumulative in nature. Cultures had to master the preceding technology to proceed and advance. Newly rising cultures built on the technologies of their predecessors. Even the Yamato culture, the last in Age of Empires to develop historically, had to build on Tool Age and Bronze Age technologies that developed farther in the West and spread gradually East.

The advance from one age to another was usually a slow process that required a gradual but extensive conversion of an entire economy. New raw materials and new fabrication techniques were required. New skills and workshops came into being. The eventual cost in time and resources was enormous, but the new efficiencies recovered those costs quickly.

Age of Empires spans 12,000 years of ancient history. This time period has been subdivided into four significant ages:

- **Stone Age** – Characterized by pursuit of the required tools of survival: the construction of shelter and the search for steadfast sources of food through hunting, fishing, and foraging.

- **Tool Age** – Characterized by farming settlements, stable food supplies, defense of territory, accelerated population growth, simple economy, and emerging military.

- **Bronze Age** – Characterized by competition for valuable resources, increasingly sophisticated technologies, metalworking, trade, colonization, centralized government, institutionalized religion, highly organized military systems, and conquest.

- **Iron Age** – Characterized by a dependence upon precious metals to drive economies, empire building, expansion, construction of massive cities supporting huge populations, sophisticated military organizations, siege tactics, armor and weaponry, dominance of seaways with war galleys and triremes and enormous construction projects including the Wonders of the Ancient World.

A game typically begins in the Stone Age and you strive to advance through the ages to reach the Iron Age. As you advance through the ages, new buildings, military units, boats, and technologies become available. Advancing through the ages costs resources and time. As a prerequisite for advancing to the next age, you

must have two different technology buildings from the current age.

To advance to the next age

1 You must have two different technology buildings from the current age.

- To advance from the Stone Age to the Tool Age, you must have a <u>Town Center</u> and two different Stone Age technology buildings (<u>Granary</u>, <u>Storage Pit</u>, <u>Dock</u>, or <u>Barracks</u>). For example, you might build a Granary and Storage Pit.

- To advance from the Tool Age to the Bronze Age, you must have two different Tool Age buildings (<u>Market</u>, <u>Archery Range</u>, or <u>Stable</u>). For example, you might build a Market and Archery Range.

- To advance from the Bronze Age to the Iron Age, you must have two different Bronze Age buildings (<u>Temple</u>, <u>Government Center</u>, <u>Siege Workshop</u>, or <u>Academy</u>). For example, you might build a Temple and Siege Workshop.

2 Click the Town Center.

3 Click the **Advance to Next Age** button.

After you reach the next age, the technology buildings from that age are available to be built. After building certain buildings, you can create new units, upgrade existing units, research new technologies or build new buildings.

Researching technology
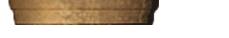
The Sumerians are credited with inventing both the wheel and writing around 3500 BC. The invention of writing, especially, was a gradual process. Both technologies provided immediate and easily understood benefits that persist today. The wheel made carts possible, greatly improving the efficiency of moving goods. The wheel was also a prerequisite for the chariot and other engines of war. The pottery wheel came into use at the same time as the transport wheel. Writing was so important to the storage and communication of knowledge that it became a technology research accelerator. After its appearance, the rate of technology advances increased. The invention of both the wheel and writing contributed to the success of Sumeria and other Mesopotamian civilizations.

In Age of Empires, new technologies can be researched as your civilization enters each successive age. Within an age there are opportunities to research entirely new concepts or upgrade ones that already exists. For example, Toolworking is a new technology that can be researched in the Tool Age. In contrast, the Broad Swordsman (Bronze Age), and Long Swordsman (Iron Age) are basically upgrades of the same infantry unit.

In ancient times, those cultures that progressed in technology tended to persevere. Those that did not fell by the wayside. The same correlation holds in Age of Empires. To be successful you must advance to keep up with, or surpass, your rivals economically and militarily.

To research technology

1 Click a technology building on the game map. The technologies you can research appear on the buttons at the bottom of the game screen.

2 Click the button that corresponds to the technology you want to research. For example, to research Toolworking from the Storage Pit, click the **Research Toolworking** button. Researching technology takes time and costs resources, but after you have researched a technology, your civilization immediately begins reaping its benefit(s).

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Upgrading military units, boats, walls, and towers

As you advance through the ages, you can upgrade your military units, boats, walls, and towers. When you upgrade, existing units of a particular type are replaced by more powerful units. However, the Axeman, Bowman, and Scout are not replaced when you upgrade to more powerful units.

To upgrade a military unit, boat, wall, or tower

1 To upgrade a military unit, click the Barracks, Archery Range, Stable, Temple, Siege Workshop, or Academy. To upgrade a boat, click the Dock. To upgrade a wall or tower, click the Granary.

2 Click the button at the bottom of the game screen that corresponds to the unit you want to upgrade. For example, to upgrade to Heavy Cavalry (from the Stable), click the **Upgrade to Heavy Cavalry** button. All existing units (Cavalry, in this case) are upgraded to Heavy Cavalry and you can train new Heavy Cavalry.

Technologies

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You can research technologies from the following buildings:

Storage Pit

Bronze Shield

Iron Shield

Metallurgy

Metalworking

Chain Mail for Archers

Chain Mail for Cavalry

Chain Mail for Infantry

Leather Armor for Archers

Leather Armor for Cavalry

Leather Armor for Infantry

Scale Armor for Archers

Scale Armor for Cavalry

Scale Armor for Infantry

Toolworking

Market

Artisanship

Coinage

Craftsmanship

Domestication

Gold Mining

Irrigation

Plow

Siegecraft

Stone Mining

Wheel

Woodworking

Government Center

Alchemy

Architecture

Aristocracy

Ballistics
Engineering
Nobility
Writing
Temple
Afterlife
Astrology
Fanaticism
Jihad
Mysticism
Monotheism
Polytheism

Toolworking

Age: Tool

Prerequisites: Build Town Center, build Storage Pit.

Cost: 100 food

Benefit: +2 attack for hand-to-hand units.

Research at: Storage Pit

The first metals put to use were those found in a relatively pure state on the earth's surface, including gold, silver, and copper. Gold could be worked in its natural state. Experimentation with it eventually suggested electrum (a natural alloy of gold and silver) and copper could also be hammered into useful shapes. Learning how to extract copper from ore and shape it into tools was an important milestone in the rise of civilization because it opened the door first to making bronze and then to making iron. Cast copper tools were an important advance over stone tools, but were too soft to have a long useful life. The discovery of bronze, made by alloying a small amount of tin with copper, ushered in a 2000-year Bronze Age. Cast bronze tools dramatically increased the efficiency of workers. Bronze weapons were superior to those made of stone and copper. Armies equipped with bronze swords, spears, and arrowheads had a critical advantage over more poorly equipped armies.

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Metalworking

Age: Bronze

Prerequisites: Build Town Center, build Storage Pit, research Toolworking.

Cost: 200 food, 120 gold

Benefit: provides +2 attack for hand-to-hand units.

Research at: Storage Pit

 The discovery and use of iron to make tools and weapons was one of the most important advances in civilization. Some historians consider the use of iron to be one of the distinguishing characteristics separating civilization from barbarism because the new tools increased productivity dramatically and led to so many new advances. Compared to bronze, iron tools were less brittle, could hold sharper edges, and held edges for a longer time without sharpening. Most importantly, iron ore was much easier to locate than copper and tin, making iron tools cheaper and more readily available. By 1000 BC iron tools were being made that were as good as the best ones of bronze; by 500 BC iron had largely supplanted bronze from Europe to Asia. The expense and scarcity of bronze had restricted its use to the elite and wealthy. Iron tools and weapons were available to nearly everyone.

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Metallurgy

Age: Iron

Prerequisites: Build Town Center, build Storage Pit, research Toolworking, research Metalworking.
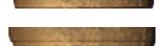
Cost: 300 food, 180 gold

Benefit: +3 attack for hand-to-hand units.

Research at: Storage Pit

You must research Metallurgy before you can upgrade to the Cataphract.

The use of iron spread throughout the Mediterranean, Middle East, and Asia during the first millennium BC, and some areas became especially adept at the new science. Certain compounds added to the molten metal increased the strength of the resulting tools. New forging techniques also resulted in better tools. The best iron workers made superior weapons that were an important advantage in battle.

Bronze Shield

Age: Bronze
Prerequisites: Build Town Center, build Storage Pit.
Cost: 150 food, 180 gold
Benefit: +1 infantry armor against Ballista, Helepolis, and missile weapons.
Research at: Storage Pit

The shield was probably the first piece of military equipment developed to protect a warrior. The earliest were made of wood or wood and hide, and were of various shapes. They were carried in the hand or on the forearm and used to ward off blows or missiles in battle. Shield designs and materials evolved to keep up with advances in weapons. Wood and hide shields were easy to smash with bronze weapons so bronze shields were developed. Bronze shields also provided better defense against missiles. Arrows, especially with metal points, were prone to lodge in wooden shields. This increased the weight of the shield and made it more unwieldy. Roman legions threw spears at barbarian formations mainly so they would pierce and weigh down the enemy's shield just before closing. Arrows and other missiles deflected off bronze shields without penetrating.

Iron Shield

Age: Iron

Prerequisites: Build Town Center, build Storage Pit, research Bronze Shield.

Cost: 200 food, 320 gold

Benefit: +1 infantry armor against Ballista, Helepolis, and missile weapons.

Research at: Storage Pit

The iron shield replaced the bronze shield when swords and other weapons of iron became common. Iron shields were not only less expensive to make, but also more effective in stopping all hand-to-hand and missile weapons. The basic iron shield remained in use until firearms made personal shields on the battlefield obsolete.

Leather Armor for Archers

Age: Tool

Prerequisites: Build Town Center, build Storage Pit.

Cost: 100 food

Benefit: +2 armor for Archery Range units.

Research at: Storage Pit

Soldiers have sought ways to protect themselves in combat since the beginnings of warfare. Long before the use of metals, leather was employed to make helmets and body armor that could stop, or at least soften, blows from blunt and edged weapons. Leather was easy to work with, it was light and not overly restrictive of movement, it could be fitted to the wearer, and it was usually plentiful and inexpensive. Leather remained an important material for body armor throughout the Bronze Age due to the high cost of metal armor. It wasn't until far into the Iron Age that metal armor was available for common soldiers.

Scale Armor for Archers

Age: Bronze

Prerequisites: Build Town Center, build Storage Pit, research Leather Armor for Archers.

Cost: 125 food, 50 gold

Benefit: provides +2 armor for Archery Range units.

Research at: Storage Pit

The use of metals to make weapons was matched by using metals to make better armor. Among the first improvements in widespread use were breastplates and greaves of bronze. The breastplate protected the torso while greaves protected the legs below the knee. Both of these items protected only the front of the soldier, saving the weight and cost that all-around protection would entail. Breastplates and greaves were worn by hoplites of the phalanx, for example, during the glory years of Greece. When used together with a large shield and bronze helmet, they left little of the soldier's body exposed to attack. Bronze armor was an example of scale armor, or plate armor, in which metal plates provided protection.

Chain Mail for Archers

Age: Iron

Prerequisites: Build Town Center, build Storage Pit, research Leather Armor for Archers., research Scale Armor for Archers.

Cost: 150 food, 100 gold

Benefit: +2 armor for Archery Range units.

Research at: Storage Pit

You must research before you can upgrade to the Heavy Horse Archer.

Chain mail was a type of body armor made of iron circlets woven together into a cloak. The interlocking chains of iron protected the body somewhat from weapons that slashed or pounded. Chain mail was also flexible and allowed more freedom of body movement than armor made of metal plates. The disadvantages of chain mail were that it required a lot of care, was heavy, and was expensive to make. Chain mail was worn only by wealthy or powerful individuals who could purchase or demand its manufacture.

Leather Armor for Cavalry

Age: Tool
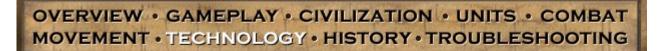
Prerequisites: Build Town Center, build Storage Pit.

Cost: 125 food

Benefit: +2 armor for Stable units.

Research at: Storage Pit

 Soldiers have sought ways to protect themselves in combat since the beginnings of warfare. Long before the use of metals, leather was employed to make helmets and body armor that could stop, or at least soften, blows from blunt and edged weapons. Leather was easy to work with, it was light and not overly restrictive of movement, it could be fitted to the wearer, and it was usually plentiful and inexpensive. Leather remained an important material for body armor throughout the Bronze Age due to the high cost of metal armor. It wasn't until far into the Iron Age that metal armor was available for common soldiers.

Scale Armor for Cavalry

Age: Bronze

Prerequisites: Build Town Center, build Storage Pit, research Leather Armor for Cavalry.

Cost: 150 food, 50 gold

Benefit: +2 armor for Stable units.

Research at: Storage Pit

The use of metals to make weapons was matched by using metals to make better armor. Among the first improvements in widespread use were breastplates and greaves of bronze. The breastplate protected the torso while greaves protected the legs below the knee. Both of these items protected only the front of the soldier, saving the weight and cost that all-around protection would entail. Breastplates and greaves were worn by hoplites of the phalanx, for example, during the glory years of Greece. When used together with a large shield and bronze helmet, they left little of the soldier's body exposed to attack. Bronze armor was an example of scale armor, or plate armor, in which metal plates provided protection.

Chain Mail for Cavalry

Age: Iron

Prerequisites: Build Town Center, build Storage Pit, research Leather Armor for Cavalry, research Scale Armor for Cavalry.

Cost: 175 food, 100 gold

Benefit: +2 armor for Stable units.

Research at: Storage Pit

Chain mail was a type of body armor made of iron circlets woven together into a cloak. The interlocking chains of iron protected the body somewhat from weapons that slashed or pounded. Chain mail was also flexible and allowed more freedom of body movement than armor made of metal plates. The disadvantages of chain mail were that it required a lot of care, was heavy, and was expensive to make. Chain mail was worn only by wealthy or powerful individuals who could purchase or demand its manufacture.

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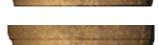
Leather Armor for Infantry

Age: Tool
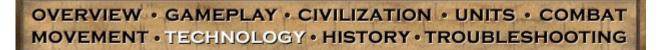
Prerequisites: Build Town Center, build Storage Pit.

Cost: 75 food

Benefit: +2 armor for Barracks and Academy units.

Research at: Storage Pit

Soldiers have sought ways to protect themselves in combat since the beginnings of warfare. Long before the use of metals, leather was employed to make helmets and body armor that could stop, or at least soften, blows from blunt and edged weapons. Leather was easy to work with, it was light and not overly restrictive of movement, it could be fitted to the wearer, and it was usually plentiful and inexpensive. Leather remained an important material for body armor throughout the Bronze Age due to the high cost of metal armor. It wasn't until far into the Iron Age that metal armor was available for common soldiers.

Scale Armor for Infantry

Age: Bronze

Prerequisites: Build Town Center, build Storage Pit, research Leather Armor for Infantry.

Cost: 100 food, 50 gold

Benefit: +2 armor for Barracks and Academy units.

Research at: Storage Pit

The use of metals to make weapons was matched by using metals to make better armor. Among the first improvements in widespread use were breastplates and greaves of bronze. The breastplate protected the torso while greaves protected the legs below the knee. Both of these items protected only the front of the soldier, saving the weight and cost that all-around protection would entail. Breastplates and greaves were worn by hoplites of the phalanx, for example, during the glory years of Greece. When used together with a large shield and bronze helmet, they left little of the soldier's body exposed to attack. Bronze armor was an example of scale armor, or plate armor, in which metal plates provided protection.

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Chain Mail for Infantry

Age: Iron

Prerequisites: Build Town Center, build Storage Pit, research Leather Armor for Infantry, research Scale Armor for Infantry.

Cost: 125 food, 100 gold

Benefit: +2 armor for Barracks and Academy units.

Research at: Storage Pit

Chain mail was a type of body armor made of iron circlets woven together into a cloak. The interlocking chains of iron protected the body somewhat from weapons that slashed or pounded. Chain mail was also flexible and allowed more freedom of body movement than armor made of metal plates. The disadvantages of chain mail were that it required a lot of care, was heavy, and was expensive to make. Chain mail was worn only by wealthy or powerful individuals who could purchase or demand its manufacture.

Architecture

Age: Bronze

Prerequisites: Build Town Center, build Granary, build Market, build Government Center.

Cost: 150 food, 175 wood

Benefit: +33% faster building construction time; +20% hit points of buildings and walls.

Research at: Government Center

The art and science of designing and constructing buildings arose from the practical need to provide first shelter, then storage for food reserves, and then defenses for both. One of the specializations that appeared in the first towns was the builder whose skills and techniques continue to evolve today. Builders and architects worked with the materials available to construct buildings and fortifications. Over time new techniques of architecture improved the efficiency, strength, and utility of construction.

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Nobility

Age: Bronze

Prerequisites: Build Town Center, build Granary, build Market, build Government Center.

Cost: 175 food, 120 gold

Benefit: +15% hit points of cavalry units, Chariot, Chariot Archer, Horse Archer, and Heavy Horse Archer.

Research at: Government Center

 Within ancient tribal groups an early hierarchical structure centered around the strongman, who probably took power in a physical contest, led the group, and enjoyed special privileges. As populations increased, the hierarchy expanded. Layers of nobility, a class of society privileged due to fighting prowess or wealth, grew between the strongman, or king, and common people and slaves. The nobility served as administrators and sub-commanders of the army. Examples of nobility were the Persian satraps, who ruled provinces of the Persian Empire, and Alexander the Great's Companions, who commanded parts of his army and formed the core of his heavy cavalry squadrons.

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Writing

Age: Bronze

Prerequisites: Build Town Center, build Granary, build Market, build Government Center.

Cost: 200 food, 75 gold

Benefit: shared exploration with allies.

Research at: Government Center

The advance of writing is benchmark technology often used to separate those cultures that were civilized from those that were barbaric. The key importance of writing is that it allowed information to be stored and passed on easily, thereby accelerating the accumulation and spread of knowledge. Writing is believed to have been invented between 4000 and 3000 BC in Sumeria. The first writing was in simple pictures called pictograms that gradually evolved into symbols representing the picture. Egyptian hieroglyphics first appeared between 3300 and 3100 BC, and are thought to have been inspired by cuneiform, the Sumerian symbolic writing. Writing appeared in China after 1600 BC.

Aristocracy

Age: Iron

Prerequisites: Build Town Center, build Granary, build Market, build Government Center.

Cost: 175 food, 150 gold

Benefit: +25% speed of Academy units.

Research at: Government Center

You must research Aristocracy before you can upgrade to the Centurion.

The Aristocracy was a privileged class, usually hereditary, that arose within many cultures. Aristocrats generally derived their power from control of farmland and the attendant infrastructure of people, towns, and manufacturing-supported food production. They kept power at the pleasure of the ruler, as long as they acceded to his wishes. Aristocrats may also have had military responsibility, especially when on the frontier of the kingdom or empire. In many cultures the aristocrats provided the senior officer corps or elite troops of the army. Commanders of the armies and navies of Athens, for example, were elected from among the aristocracy of land owners.

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Alchemy

Age: Iron

Prerequisites: Build Town Center, build Granary, build Market, build Government Center.

Cost: 250 food, 200 gold

Benefit: +1 attack for siege weapons and missile weapons.

Research at: Government Center

The beginnings of chemistry can be traced back to ancient attempts to make gold and silver out of base metals, to find a universal cure for disease, and to discover secrets of prolonging life. The experiments and secrecy of the alchemists gave them an aura of mystery and magic. Alchemists were both feared and sought out for help. In an ancient world of little scientific understanding, mystery and magic had power.

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Ballistics

Age: Iron

Prerequisites: Build Town Center, build Granary, build Market, build Government Center.

Cost: 200 food, 50 gold

Benefit: increases the accuracy of missile weapons and siege weapons by allowing a unit to fire where the target is predicted to be when the weapon strikes, as opposed to where the target is when the weapon is fired.

Research at: Government Center

You must research Ballistics before you can upgrade to the Ballista Tower.

The use of missile weapons for war presented challenges that hunting with the bow did not. Hunters stalked game and shot ideally at a stationary target. War targets were often armored, partially shielded, or moving. Effective use of the bow and other missile weapons required tactics and training. Bowmen of low skill were taught to fire in barrages at an area rather than at specific targets. Better-trained archers learned to shoot for specific parts of the target, including the horses of chariots or cavalry. Ballistics, the study of projectile flight, was derived from the name of an ancient missile weapon, the Ballista.

Engineering

Age: Iron

Prerequisites: Build Town Center, build Granary, build Market, build Government Center.

Cost: 200 food, 100 wood

Benefit: +2 range for siege weapons.

Research at: Government Center

You must research Engineering before you can upgrade to the Juggernaught.

Ancient engineers were able to build remarkable structures even though the raw materials and tools with which they could work were often limited. The Egyptian pyramids, for example, were built of multiton stone blocks using only the fulcrum and lever, wedge, ramp, sledge, and rollers. The pyramid builders of 2600 BC used tools made only of wood and copper. Advances in engineering were slow and based primarily on practical experience until advances in mathematics, especially from the Greeks, led to new experimentation and techniques.

Woodworking

Age: Tool

Prerequisites: Build Town Center, build Granary, build Market.

Cost: 120 food, 75 wood

Benefit: +1 range for missile weapons; +2 woodcutting ability.

Research at: Market

 The small stone blades that characterized the New Stone Age (neolithic period) made possible finer techniques in many areas, including woodworking. The larger and more unwieldy stone tools of the past were capable of crude cutting and carving only. Better woodworking improved other tools and weapons, making possible the bow and arrow and spear thrower.

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Artisanship

Age: Bronze

Prerequisites: Build Town Center, build Granary, build Market, research Woodworking.

Cost: 170 food, 150 wood

Benefit: +1 range for missile weapons; +2 woodcutting ability.

Research at: Market

The discovery and use of first copper and then the much more useful bronze for tools and weapons was a dramatic leap in technology. Bronze, especially, possessed a hardness, strength, and ability to hold an edge that far surpassed the best stone tools, making it much more useful when working with stone, wood, hides, meat, and other materials. Cultures that used bronze had a decided economic and military advantage over those that did not.

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Craftsmanship

Age: Iron

Prerequisites: Build Town Center, build Granary, build Market, research Woodworking, research Artisanship.

Cost: 240 food, 200 wood

Benefit: +1 range for missile weapons; +2 woodcutting ability.

Research at: Market

You must research Craftsmanship before you can upgrade to the Helepolis.

The discovery of inexpensive ways to make iron was as great a technological leap over bronze making as bronze was over stone. Iron surpassed bronze in every critical characteristic—hardness, strength, and ability to hold an edge before needing to be resharpened—plus one. Iron was much easier to acquire than were copper and tin, making it available to all cultures and for all uses. Historians consider the ability to make and use iron one of the distinctions between a barbaric and civilized culture.

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Stone Mining

Age: Tool

Prerequisites: Build Town Center, build Granary, build Market.

Cost: 100 food, 50 stone

Benefit: +3 stone mining ability.

Research at: Market

Wood for building was scarce in most places where civilizations first arose. Vast forests just did not exist in these predominately arid regions. The principle building material for common uses was mud bricks, sun-dried at first and then fire baked. In some areas important structures such as temples, palaces, tombs, and fortifications were built of stone when it was available. Much information about ancient Egypt was preserved because of the permanence of stone. Equivalent structures in Mesopotamia collapsed into mounds of earth after many centuries of neglect and weathering. Acquiring non-wood building materials through brick making or quarrying was the object of Stone Mining.

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Siegecraft

Age: Iron

Prerequisites: Build Town Center, build Granary, build Market, research Stone Mining.

Cost: 190 food, 100 stone

Benefit: +3 stone mining ability; villagers can destroy walls and towers.

Research at: Market

You must research Siegecraft before you can upgrade to the Heavy Catapult.

Despite the written records and depictions of cities and fortifications being stormed with the aid of siege equipment, starvation was the only certain and effective way to take strongholds before the gunpowder age. The defender of a strong position, with adequate troops, food, and water, had all the advantages. Physical assault of strongholds was a difficult proposition accomplished regularly only by those armies possessing siegecraft—the necessary equipment, resolve, leadership, élan, discipline, and skill. Examples from ancient history were the army of Alexander the Great that conducted 20 sieges over a ten-year period, most after the fall of the Persian Empire; the Hittites, the Assyrians, and the Romans.

Gold Mining

Age: Tool

Prerequisites: Build Town Center, build Granary, build Market.

Cost: 120 food, 100 wood

Benefit: +3 gold mining ability.

Research at: Market

Gold washed down from hills and mountains was probably the first metal with which humans experimented. It was sufficiently soft and pure to be fashioned easily into objects of beauty for adornment and trade. The value of gold remained high as populations increased because the demand for it continued to exceed supply. Because of this value, the trail of gold was followed back to the source of the alluvial nuggets. Gold mining was developed to obtain ore from which the pure metal could be extracted. Many of the most beautiful objects that survive from antiquity are made of gold, including hundreds of items from the Egyptian Pharoah Tutankhamen's tomb.

Coinage

Age: Iron

Prerequisites: Build Town Center, build Granary, build Market, research Gold Mining.

Cost: 200 food, 100 gold

Benefit: +25% gold mine productivity; free tribute to other civilizations.

Research at: Market

The first true coins were minted in ancient Lydia, now part of modern Turkey. These first coins were made from electrum, a naturally occurring malleable alloy of gold and silver. Coins, and money in general, proved an important facilitator of trade and economic progress. Money acted as a storehouse of value, a medium of exchange, and a standard of value, as it continues to do today. Following the conquest of the Persian Empire, the concept of coinage was adopted by the Greeks and spread by them throughout the Hellenistic world.

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Domestication

Age: Tool

Prerequisites: Build Town Center, build Granary, build Market.

Cost: 200 food, 50 wood

Benefit: +75 Farm productivity.

Research at: Market

The revolution in agriculture involved both the development of farming and the domestication of animals. The ability to control and manage herds of milk- and meat-producing animals also served to free humans from the drudgery and desperation of continual hunting and gathering. Herding did not lead necessarily to a sedentary village life, however. The need to find pasture often meant that herding societies remained nomadic, at least for part of the year. Domesticated sheep and goats first appear in the archaeological record around 7500 BC in the Zagros Mountainsto the east of the Tigris and Euphrates River valleys. Cattle were domesticated around 6000 BC in both the Sahara and Egypt, perhaps near simultaneously. Domestication of cattle alone may have been responsible for a doubling of world human population in a few generations.
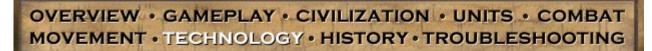
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Plow

Age: Bronze

Prerequisites: Build Town Center, build Granary, build Market, research Domestication.

Cost: 250 food, 75 wood

Benefit: +75 Farm productivity.

Research at: Market

The first agriculturists planted seeds by hand using digging sticks to open the ground. The invention of the plow made it possible to more easily prepare farmland for planting. The plow ripped open long rows for seeding, burying unwanted plants and cutting unwanted roots in the process. When pulled behind domesticated animals, such as oxen, food production per farmer and per acre again increased. The plow has continued to evolve since ancient times. For example, U.S. President Thomas Jefferson invented an improved version.

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Irrigation

Age: Iron

Prerequisites: Build Town Center, build Granary, build Market, research Domestication, research Plow.

Cost: 300 food, 100 wood

Benefit: +75 Farm productivity.

Research at: Market

One of the key steps in the agricultural revolution was understanding and managing irrigation. Observation of the natural world revealed eventually the relationship between planted seeds, good soils, sunlight, water, and resultant crops. Large-scale irrigation in both Mesopotamia and Egypt turned the rich but arid soils near the rivers into rich farmlands and made possible the rise of the first great civilizations on earth. Building the dams and channels to irrigate these lands required sophistication in government, construction, and engineering not seen previously in any society.

Wheel

Age: Bronze

Prerequisites: Build Town Center, build Granary, build Market.

Cost: 175 food, 75 wood

Benefit: +30% villager speed.

Research at: Market

You must research the Wheel before you can build a Chariot or Chariot Archer.

The use of the wheel for transport was discovered in Sumeria sometime after 3400 BC and derived from the potter's wheel that appeared first. The Sumerians learned that in a small cart, a donkey could pull a load equal to three times what it could carry on its back. The wheel revolutionized transport and had an important impact on the battlefield as well. By the Bronze Age, chariot archers were dominating warfare on the open plains. The wheel was apparently used only for children's toys in ancient America, probably because of the rough geography and the lack of an animal like the ox or horse.

Astrology

Age: Bronze

Prerequisites: Build Town Center, build Granary, build Market, build Temple.

Cost: 150 gold

Benefit: Priests convert enemy units 30% faster.

Research at: Temple

Ancient observers of the stars and the heavens noted the correlation between the sun, the seasons, and the success of crops. The study of celestial events was an early step in the attempt to understand and control the uncertainties of life and became an important part of many early religions. The sun god Ra, for example, was the most powerful of the Egyptian gods. Priests who could determine the start and end of the growing season, foretell the phases of the moon, and predict terrifying eclipses greatly enhanced their power in society. The power of astrologers increased when their subjects believed that the influence of the stars and planets on human affairs could be divined from celestial positions and aspects.

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Mysticism

Age: Bronze

Prerequisites: Build Town Center, build Granary, build Market, build Temple.

Cost: 120 gold

Benefit: Priest hit points doubled.

Research at: Temple

Mysticism was a spiritual discipline that sought to achieve contact with gods or other perceived realities through contemplation, trances, or meditation. It was induced or enhanced by drugs in some cases, and part of many ancient beliefs. For religions seeking to explain the great unknown, the apparent ability to communicate through media unknown to the average person was a powerful selling point. People dream every night, so it was a logical step to believe that a few members of the group could somehow make sense of dreams or see through the confusion to communicate with another dimension.

Polytheism

Age: Bronze

Prerequisites: Build Town Center, build Granary, build Market, build Temple.

Cost: 120 gold

Benefit: Priest movement speed 40% faster.

Research at: Temple

The first religions embraced a multitude of gods, each associated with one aspect of life. There might have been a sun god, a moon god, a god of the forest, a god of the river, etc. The multitude of gods was useful in understanding how the world worked and in directing petition and prayer for specific help and relief. The existence of multiple gods increased the power of priests because each god had special needs and abilities that needed interpretation. The ancient Egyptians, for example, worshipped around 2000 gods. Many of these were only local deities, but others were held sacred throughout the country.

Fanaticism

Age: Iron

Prerequisites: Build Town Center, build Granary, build Market, build Temple.

Cost: 150 gold

Benefit: Priests rejuvenate 50% faster after converting a unit.

Research at: Temple

You must research Fanaticism before you can upgrade to Legion.

Religion evolved to provide a spiritual foundation and understanding to life once humans became sufficiently intelligent to ponder the great terrifying questions of our existence. A disturbing byproduct of the spread of religion was fanaticism—the intense, unquestioning devotion to the ideas and leadership of other humans. Fanatics were capable of any act, even at great risk to their lives, and were especially dangerous enemies in war.

Monotheism

Age: Iron

Prerequisites: Build Town Center, build Granary, build Market, build Temple.

Cost: 350 gold

Benefit: Priests can convert enemy Priests and buildings (except Town Centers and Wonders).

Research at: Temple

The belief that there is only one God has evolved from the Persian religion of Zoroastrianism down through Judaism to many of the more popular religions of today. Whether monotheism is an advancement or not is a subjective question. The widespread popularity over time and the fervor of adherents indicates that monotheistic religions have more successfully met the requirements of a religion than other beliefs that have fallen aside.

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Afterlife

Age: Iron

Prerequisites: Build Town Center, build Granary, build Market, build Temple.

Cost: 275 gold

Benefit: +3 Priest range so they can convert units from farther away.

Research at: Temple

An important question that ancient religions attempted to address was what happens when people die. Many religions held that there was an afterlife, a place or existence that continued once a person's time on earth ended. The promise of an attractive afterlife was a powerful inducement for behavior that conformed to the goals of a particular religion. Fervent believers in an afterlife might give up their lives to serve their gods. Well-considered religions that offered a good return for acceptance, including an attractive afterlife, grew more in power and influence than those that did not. Christianity, for example, promised everlasting life to everyone of faith, not just to the rich buried in great tombs with servants and goods.
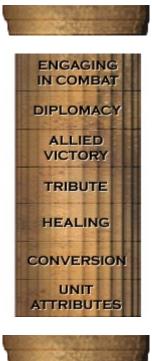
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Jihad

Age: Iron

Prerequisites: Build Town Center, build Granary, build Market, build Temple.

Cost: 120 gold

Benefit: increases the attack, speed, and hit points of villagers and decreases their gathering efficiency.

Research at: Temple

The word jihad can mean a crusade or struggle, and comes from the holy war of Islam directed against all that defied the word of God as written in the Koran. The equivalent of jihad can occur in any society brought to a peak of emotion by religious fervor or other means. The value of the jihad to society is that the people caught up in the emotion of the enterprise place their best interests, even their lives, second to the purpose of the crusade. The jihad was especially effective at a most desperate time when survival of the group hung in the balance.

Engaging in combat

Military units and villagers can engage in combat on land. War ships can engage in combat at sea. Military units automatically attack units within their sight unless you order them to attack a different unit or stand ground. To win a game by military conquest, your civilization (or team) must destroy all enemy villagers, military units, war ships, and buildings. You do not need to destroy trade vessels, transport vessels, fishing vessels, Artifacts, Ruins, or walls. You can pursue an allied victory with other civilizations.

The military units in Age of Empires are easily understood for the most part, with the exception of the mystical Priest. This unit represents the spiritual leaders of your tribe who can heavily influence the beliefs of your people and of your enemies. The leaders of a particularly powerful religion could exhort their people to work and fight harder. A strong religion could adversely affect the morale of a weaker culture. When the Persian army approached Babylon around 600 BC, for example, the Babylonians surrendered their weak king and culture to the Persians, whom they perceived as more highly blessed and well-led. Heroes look identical to other military units but have special attributes, as shown in the status box in the lower left corner of the game screen.

Wounded villagers and military units can be healed by a Priest. Enemy villagers, military units, buildings, and boats can be converted to your civilization by a Priest. Damaged buildings and boats can be repaired by a villager.

To order a military unit, villager, or boat to attack

Click a military unit, villager, or boat (or select a group), and then right-click the enemy villager, military unit, or building to attack.

To order a military unit or boat to stand ground

1 Click a military unit or boat.

2 Click the **Stand Ground** button.

The military unit or boat remains in the location. It only attacks an enemy villager, military unit, boat, building, or wall within its range. To clear the Stand Ground order, move the unit.

To order a catapult unit to attack an area

The Stone Thrower, Catapult, Heavy Catapult, Catapult Trireme, and Juggernaught, which cause area of effect damage, can fire at a general area instead of at a specific target, such as a military unit or building.

1 Click a Stone Thrower, Catapult, Heavy Catapult, Catapult Trireme, or Juggernaught.

2 Click the **Attack Ground** button, and then click a location on the map.

Diplomacy

Each civilization can choose its diplomatic stance toward other civilizations. Two civilizations can take different stances toward each other. If a civilization is allied with an enemy, the enemy civilization attacks, but the allied civilization does not.
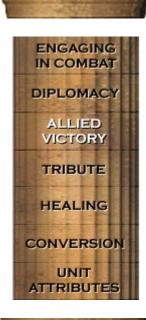
Researching <u>Writing</u> lets allies share exploration.

To set your diplomatic stance toward other civilizations

1 Click the **Diplomacy** button on the menu bar.

2 Select your diplomatic stance toward each of the other players:

- **Ally** – Your military units do not attack other players' buildings, villagers, military units, or boats.
- **Neutral** – Your military units attack all buildings and military units (but not villagers) who enter their sight.
- **Enemy** – Your military units (except <u>Scouts</u>) attack all buildings, military units, and villagers who enter their sight.

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Allied victory

In allied victory, two or more civilizations can work together to win (or lose) as a team. Any allied civilization who achieves the victory condition(s) wins the game for all allies.

To pursue an allied victory, each player must set their diplomatic stance toward the other civilizations as Ally, and select the Allied Victory option. If you choose to play on a team when you start a single player or multiplayer game, the game automatically sets these options for you.

When the standard victory condition is control of all Artifacts or Ruins, a team wins an allied victory regardless of which team member owns the Ruin or Artifacts. For example, if player 1 controls two Artifacts and player 2 controls three Artifacts, the team wins an allied victory.

Researching Writing lets allies share exploration.

To pursue an allied victory

1 Click the **Diplomacy** button on the menu bar.

2 Set your diplomatic stance to **Ally** for each civilization on your team. All players who want to pursue an allied victory must do this.

3 Click **Allied Victory**. All players who want to pursue an allied victory must do this.

Tribute

The central governments of ancient empires were supported by tribute paid to the emperor or king by province governors and vassal states on their borders. Vassal states in particular paid tribute in order to retain some autonomy from the imperial sphere but still benefit from the protection of a bigger neighbor. The Persian kings, for example, collected camels, wheat, horses, gold, carpets, sheep, cattle, weapons, copper, pottery, and other goods from the corners of their empire. This tribute supported the king and government and supplied the armies that maintained peace within and outside the empire. The development of coinage facilitated the process of tribute because it was much easier to transport money than perishable and more bulky items.
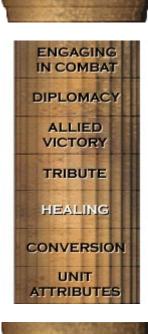
In Age of Empires, it is possible to send tribute in the form of food, wood, stone, or gold to any other player in the game. This can be done to buy off an impending attack or to encourage an attack against another player. Tribute can also be offered to help an ally or other player accumulate the resources needed to advance to the next age or build a Wonder.

A civilization can tribute food, wood, stone, and gold to another civilization at any time. There is a 25 percent fee to pay tribute. For example, if you tribute 100 gold, 125 gold is deducted from your stockpile (100 gold is deposited in the other player's stockpile, and 25 gold is paid as a fee). Researching Coinage eliminates this fee.

To pay tribute

1 Click the **Diplomacy** button on the menu bar.

2 Click the resource(s) to tribute to a civilization (food, wood, stone, or gold).

Each time you click the button, the civilization receives 100 of the item. If you have less than 100 of an item in your stockpile, the civilization receives the amount you have minus the 25 percent fee. The button shows the amount of the tribute. Your stockpile of each item (minus the tribute) is shown at the top of the column.

3 To pay the tribute, click **OK**. The resources are deducted from your stockpile. Or, if you choose not to pay tribute, click **Clear Tributes**.

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ATTRIBUTES

Healing villagers and military units

Priests can heal the hit points of wounded villagers and military units from their own and allied civilizations. A Priest must be able to stand adjacent to a unit in order to heal it. Once a Priest has healed a unit, it continues to automatically heal any nearby villagers and military units. Unlike conversions, there is no rejuvenation period between one healing and the next. Priests cannot heal buildings or boats.
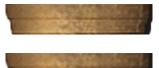
To heal a villager or military unit

1 Click a Priest.
2 Right-click the villager or military unit to heal.
  -or-
  Click the **Heal** button, and then click the villager or military unit to heal.

Converting enemy units

Priests can convert enemy villagers, military units, boats, and most buildings to their civilization. After being ordered, Priests attempt to convert a unit as soon as it is within their range. Researching Afterlife increases the range of Priests for converting military units.

Researching Monotheism lets Priests convert buildings and enemy Priests. To convert buildings, the Priest must move adjacent to the building. If you convert a building you have not yet constructed, you cannot use the converted building until you construct the building yourself. For example, if you convert a Barracks, you cannot train military units there unless you have already constructed your own Barracks.

Boats are twice as resistant to conversion as other units. Chariots are also resistant to conversion. Researching Astrology lets Priests convert units more quickly.

Priests must rejuvenate their strength after attempting a conversion. The rejuvenation percentage is shown in the status box in the lower-left corner of the game screen. Researching Fanaticism lets Priests rejuvenate more quickly.
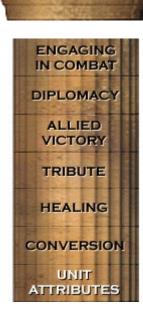
Priests do not automatically convert nearby units, unless they are attacked. When the Priest has converted a unit, he stands idle until given another command. If a Priest converts a Light Transport or Heavy Transport carrying units, the ship is converted but its cargo is not. Converted units maintain their attributes (attack, range, etc.) at conversion; they cannot be upgraded. Technologies you research do not apply to converted units, except Monotheism, Astrology, Fanaticism, Ballistics, and Siegecraft. Priests cannot convert Town Centers, Wonders, or allied villagers, military units, or buildings.

To convert enemy villagers, military units, and boats

1 Click a Priest.

2 Right-click the enemy villager, military unit, building, or boat to convert.

  -or-

  Click the **Convert** button, and then click the enemy villager, military unit, building, or boat to convert.

Unit attributes

ENGAGING
IN COMBAT

DIPLOMACY

ALLIED
VICTORY

TRIBUTE

HEALING

CONVERSION

UNIT
ATTRIBUTES

Villagers, military units, boats, and buildings can have the following attributes. Information about the specific attributes of each unit are listed with the description of each unit and on the Technology Tree Foldout.

[insert bitmap of icon] **Attack** – How much damage a unit inflicts.

[insert bitmap of icon] **Armor** – Reduces the amount of damage a unit suffers in hand-to-hand combat. For example, +5 armor reduces damage by 5.

[insert bitmap of icon] **Piercing Armor** – Reduces the amount of damage a unit suffers from Ballista, Helepolis, and missile weapons.

[insert bitmap of icon] **Range** – How far missile weapons fire.

Hit points – How much damage a unit can suffer before it dies. To display a unit's hit points, click the unit. The colored bar that appears above a unit shows its general health (green = healthy, red = wounded). The unit's hit points are shown in the status box in the lower-left corner of the game screen (current hit points/maximum hit points). Priests can heal wounded units.

Fire rate – How many seconds it takes a unit to attack again.
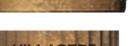
Speed – How fast a unit moves.

VILLAGERS

MILITARY
UNITS

BOATS

BUILDINGS

Buildings

VILLAGERS

MILITARY UNITS

BOATS
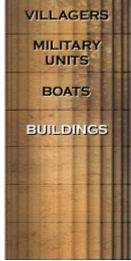
BUILDINGS

Technology
Academy
Archery Range
Barracks
Dock
Government Center
Granary
Market
Siege Workshop
Stable
Storage Pit
Temple
Town Center
Non-technology
Farm
House
Wonder
Small Wall
Medium Wall
Fortification
Watch Tower
Sentry Tower
Guard Tower
Ballista Tower

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Academy

Age: Bronze

Prerequisites: Build Town Center, build Barracks, build Stable.

Cost: 200 wood
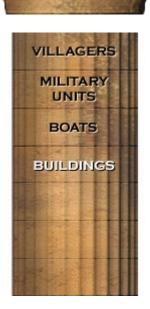
Hit points: 350

The Academy lets you train elite infantry units, including the Hoplite, Phalanx, and Centurion.

Researching Architecture increases the hit points and decreases the construction time of this building.

The academy was the Greek equivalent of a school. Students, usually only free men and favored slaves, received an education at the academy. Subjects of study included the typical fare of schools but also politics, athletics, and military training. The most rigorous of the Greek academies were those of Sparta, where boys were taken from their parents at an early age and educated in a military environment. The academy prepared the individual for service to the state as a citizen and as a soldier in the phalanx. In one of the remarkable encounters of history, the future Alexander the Great was educated at the Academy of Aristotle.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Archery Range

Age: Tool

Prerequisites: Build Town Center, build Barracks.

Cost: 150 wood

Hit points: 350

The Archery Range lets you train archers, including the Bowman, Improved Bowman, Composite Bowman, Chariot Archer, Elephant Archer, Horse Archer, and Heavy Horse Archer. You must build the Archery Range before you can build the Siege Workshop.

Researching Architecture increases the hit points and decreases the construction time of this building.

The bow was developed as a hunting weapon long before the first towns appeared and was easily adapted to warfare. The bow allowed fighting from a distance and from behind cover, so archers did not have to fight face-to-face with their enemy. As the first civilizations grew in size and their armies grew correspondingly, formal training of archers was instituted. As part of this training, bowmen practiced shooting on archery ranges to improve accuracy.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Barracks

Age: Stone

Prerequisites: Build Town Center.

Cost: 125 wood

Hit points: 350

The Barracks lets you train infantry, including the Clubman, Axeman, Short Swordsman, Broad Swordsman, Long Swordsman, and Legion. You must build the Barracks before you can build the Archery Range, Siege Workshop, Stable, or Academy.

Researching Architecture increases the hit points and decreases the construction time of this building.

When the first armies came into being, places were needed eventually to make weapons, store weapons, drill troops, and house troops. The Barracks in Age of Empires represents these places.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Dock

Age: Stone

Prerequisites: Build Town Center.

Cost: 100 wood
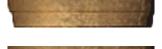
Hit points: 350

The Dock lets you create boats, including the Fishing Boat, Fishing Ship, Trade Boat, Merchant Ship, Light Transport, Heavy Transport, Scout Ship, War Galley, Trireme, Catapult Trireme, and Juggernaught.
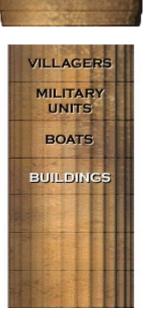
The Dock is also where fishing vessels deposit food and trade vessels deposit gold from trading.

Researching Architecture increases the hit points and decreases the construction time of this building.

The earliest boats were simply tied up to rocks or trees on shore to take on or drop off cargo or were physically pulled onto the beach. Later, wooden structures were built out into the water to facilitate loading and unloading. Docks were also safer for ships because ships could avoid being beached, which strained the hulls and increased leaking. When the dock was extended beyond the shallows, even larger ships could be tied up, further improving efficiencies.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Government Center

Age: Bronze

Prerequisites: Build Town Center, build Granary, build Market.

Cost: 175 wood
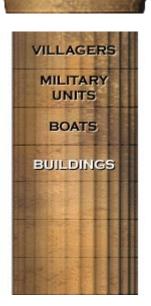
Hit points: 350

The Government Center lets you build additional Town Centers and research technologies that improve your buildings and military units, including Writing, Architecture, Engineering, Aristocracy, Alchemy, Nobility, and Ballistics.

Researching Architecture increases the hit points and decreases the construction time of this building.

The government center was the administrative center of the town, village, city, kingdom, or empire. It was often the palace of the strongman or king. It was here that justice was dispersed, records kept, taxes collected and stored, diplomacy conducted, and plans made. The development of the government center spurred technology such as architecture through the commission of public works and writing for the keeping of records. The expansion of kingdoms led to a hierarchy of elites, often a nobility, that were needed as middle managers when the expanse of lands exceeded the ruler's ability to control directly. The provinces of the Persian Empire, for example, were ruled like independent states by satraps who owed tribute and allegiance to the king in Susa.

Granary

Age: Stone

Prerequisites: Build Town Center.

Cost: 120 wood

Hit points: 350

The Granary lets you build walls and towers, including the Small Wall, Medium Wall, Fortification, Watch Tower, Sentry Tower, Guard Tower, and Ballista Tower. You must research the Granary before you can build the Market.

Foragers and farmers can deposit food from Farms and forage sites at the Granary instead of the Town Center.

Researching Architecture increases the hit points and decreases the construction time of this building.

Following the advance of farming, humans faced for the first time the happy problem of how to safely store large quantities of food grains. The granary made it possible to preserve growing season surpluses for consumption during winter months. The granary was a central location where grain could be warehoused, guarded, and distributed fairly as needed. The need to protect food supplies was an early reason for building walls and fortifications. Without protection, the surpluses in the granary were easily taken by raiders from nearby hunting and gathering groups.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Market

Age: Tool

Prerequisites: Build Town Center, build Granary.

Cost: 150 wood

Hit points: 350

The Market lets you build Farms and research technologies that improve your military units and the effectiveness of your villagers, including Woodworking, Artisanship, Craftsmanship, Stone Mining, Siegecraft, Gold Mining, Coinage, Domestication, the Plow, Irrigation, and the Wheel. You must build the Market before you can build the Government Center or Temple.

Researching Architecture increases the hit points and decreases the construction time of this building.

The specialization made possible by the development of agriculture created the need for a place where craftsmen could meet to barter their wares for those of others and for food. The market in each town and village was the place where barter and exchange took place. The development of the market marked the change from the small hunting/foraging group that shared its harvest to the much more complex economy that rose with the rise of towns and cities. Specialization resulted in efficiencies of scale and greater overall production, but the market was needed to allocate the community's production fairly among the food providers and specialists. The profit motive spurred innovation to increase production. The potter, for example, looked for ways to make more and better pots for the same effort to increase the amount of food that he could obtain by trading pots.

VILLAGERS

MILITARY
UNITS

BOATS

BUILDINGS

Siege Workshop

Age: Bronze

Prerequisites: Build Town Center, build Barracks, build Archery Range.

Cost: 200 wood
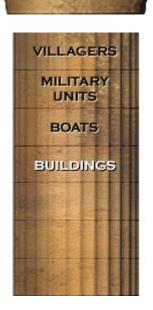
Hit points: 350

The Siege Workshop lets you build siege weapons, including the Stone Thrower, Catapult, Heavy Catapult, Ballista, and Helepolis.

Researching Architecture increases the hit points and decreases the construction time of this building.

The earliest fortifications yet discovered date from 7000 BC, but evidence of siege weapons doesn't appear until much later. We can assume, however, that siege equipment was in use long before the first evidence that has survived.   Evidence of a scaling ladder does not appear until about 2500 BC. The earliest record of a simple battering ram comes from 1900 BC. A more powerful ram plus the undermining of walls appears by 880 BC. The mobile siege tower first appears one hundred years later. The catapult was invented by Greeks in 397 BC. There were no further significant advances in siege engines until the advent of gunpowder. Siege engines were researched and built in siege workshops.

Stable

Age: Tool

Prerequisites: Build Town Center, build Barracks.

Cost: 150 wood
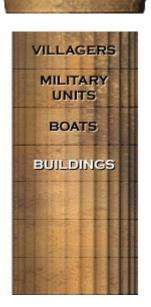
Hit points: 350

The Stable lets you train cavalry units, including the Scout, Cavalry, Heavy Cavalry, Cataphract, Chariot, and War Elephant. You must build the Stable before you can build the Academy.

Researching Architecture increases the hit points and decreases the construction time of this building.

The horses that survived the last ice age were relatively small animals unsuited for riding or pulling. They were hunted out of existence in the Americas and domesticated first for food on the steppes of Asia. Over many generations of selective breeding, they grew large enough to be of use other than as food. One issue that had to be resolved was how to harness them without causing choking. Humans eventually learned to ride, first from the rear, non-control position over the hips, and then from the forward control position that we are familiar with today. The first evidence of horses being ridden appears in the second millennium BC, although it is generally accepted that they were ridden earlier in Asia. The Stable represents the application of animals, primarily the horse, to warfare, first pulling chariots and then carrying warriors. Detailed records survive from Assyria and elsewhere related to the acquisition, training, equipping, and employment of horses in battle.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Storage Pit

Age: Stone

Prerequisites: Build Town Center.

Cost: 120 wood

Hit points: 350

The Storage Pit lets you research technologies that improve the armor and attack strength of military units, including Toolworking, Metalworking, Metallurgy, the Bronze Shield, the Iron Shield, Leather Armor for Infantry, Scale Armor for Infantry, Chain Mail for Infantry, Leather Armor for Cavalry, Scale Armor for Cavalry, Chain Mail for Cavalry, Leather Armor for Archers, Scale Armor for Archers, and Chain Mail for Archers.

Hunters, fishermen, and miners can deposit meat, fish, stone, wood, and gold at the Storage Pit instead of at the Town Center.

Researching Architecture increases the hit points and decreases the construction time of this building.

The storage pit was the functional equivalent of the granary, but for meat instead of grain. Storing meat presented special problems because it spoiled so quickly and easily. Meat was generally stored by drying or salting. The Storage Pit also represents the tool- and weapon-making skill of hunting societies, leading eventually to metalworking, making war, and armor making. In this capacity it also serves as a storehouse and collection point for the raw materials of tool and weapon making: wood, stone, and gold (representing all metals).

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Temple

Age: Bronze

Prerequisites: Build Town Center, build Granary, build Market.

Cost: 200 wood

Hit points: 350

The Temple lets you train Priests and research technologies that increase their powers, including Polytheism, Mysticism, Astrology, Monotheism, Afterlife, Jihad, Fanaticism.

Researching Architecture increases the hit points and decreases the construction time of this building.

The temple was a religious center. It was often the earthly home or point of communication with a particular god or goddess. Priests or priestesses in the temple acted as the servants of the resident god or goddess and managed contact to and from the people, plus instruction, rituals, petitions, and answers to questions. The most common form of petition was the prayer. Another was the provision of gifts that supported the temple and its servants. A less common petition was the sacrifice of animals or even humans. The general belief of the time was that the more elaborate a temple, the taller it was, and the more grand, the more disposed the god or goddess would be to provide good weather, rainfall, and crop yields, while keeping away pests, disease, and human invaders.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Town Center

Age: Stone

Prerequisites: uild Town Center, build Granary, build Market, build Government Center.

Cost: 200 wood

Hit points: 600

The Town Center lets you create villagers and advance to the next Age. It is also where villagers can deposit food, wood, gold, and stone. The Town Center supports 4 villagers, military units, or boats. Priests cannot convert Town Centers.

After you build a Government Center, you can build additional Town Centers to expand your civilization's dominance and build Town Centers closer to distant resources or replace your Town Center if it is destroyed in combat.

Researching Architecture increases the hit points and decreases the construction time of this building.

All villages and towns had an administrative center that was the site of governmental power and leadership. In the earliest villages this might have been the leader's home. Later it might have been the king's palace. The center was often the place where important supplies, especially food surpluses, were stored. Vessels for storing grain and oil were found in the ruins of the Palace at Knossos on Crete. Some of the earliest accounting records yet found were clay tablets left in long-forgotten storerooms in ancient Sumeria and in Hittite cities. The destruction of the town center usually meant the destruction of the town's governmental infrastructure.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Farm

Age: Tool

Prerequisites: Build Town Center, build Granary, build Market.

Cost: 75 wood

Hit points: 50

The Farm provides a reliable supply of food, which can be gathered by a villager. Farms produce food at a fixed rate, so assigning more than one villager to work a Farm does not increase its productivity. Farms eventually go fallow, in which case you can build another one.

Researching Architecture increases the hit points and decreases the construction time of this building. Domestication, the Plow, and Irrigation increase Farm production.

The humble farm was the foundation of the great civilizations of antiquity and most human societies since. The farm was the technological advance that provided the large and dependable supplies of food necessary for civilization to arise. Farming began when edible seeds and fruits were preserved from one growing season and systematically planted in prepared ground the following season. The plants that resulted were nurtured and protected until the edible produce was suitable for harvest. Important farming advancements in ancient times included irrigation of rich but arid land, the plow that opened the soil for receiving seeds, and the continual selection of seeds from the most successful plants that gradually improved food plant yields.

VILLAGERS

MILITARY
UNITS

BOATS

BUILDINGS

House

Age: Stone

Prerequisites: Build Town Center.

Cost: 30 wood

Hit points: 75

A House supports up to four villagers, military units, or boats. You must have enough houses before you can create new units. If a House is destroyed, you do not lose the units it supported, but you must build new houses before you can build new villagers, military units, or boats.

Researching Architecture increases the hit points and decreases the construction time of this building.

Shelter increased in importance when humans expanded their range farther away from the equator in the wake of the receding ice sheets and into climates of wide seasonal variation. Growing human populations quickly occupied the few natural shelters available in these areas. The provision of man-made shelter made existence in challenging and variable climates possible. Without houses, year-round populations could not have increased beyond minimums.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Wonder

Age: Iron
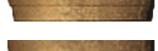
Prerequisites: Advance to the Iron Age.

Cost: 1000 wood, 1000 stone, 1000 gold

Hit points: 500

Building a Wonder can be a victory condition that wins the game or it can provide score points. You can build more than one Wonder.

Researching Architecture increases the hit points and decreases the construction time of this building.

A Wonder is a massive structure, a crowning achievement of technology, resources, and construction time for civilizations who build one. Examples of historic ancient wonders that have become icons for their civilization are the Egyptian Pyramids, the Great Wall of China, and the Athenian Acropolis. You must advance to the Iron Age before you can build a Wonder. Priests cannot convert Wonders.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Small Wall

Age: Tool

Prerequisites: Build Town Center, build Granary, research Small Wall.

Research cost: 50 food

Cost: 5 stone

Hit points: 200

Research at: Granary

The Small Wall is the weakest of the walls. Upgrades include the Medium Wall and Fortification.

Walls are defensive structures that can be built around your empire or important areas. Villagers and military units cannot move through standing walls, however, they can attack the walls. Stone Throwers, Catapults, Heavy Catapults, Ballistas, and the Helepoplis are particularly effective for destroying walls.

Researching Architecture increases the hit points and decreases the construction time of this wall.

In his book *A History of Warfare*, John Keegan speaks of three forms of fortification—refuges, strongholds, and strategic defenses. He describes the refuge as a place of short-term safety from an enemy who does not possess the means for a protracted siege or who wishes only to raid and carry off plunder, perhaps repeatedly over time. The earliest walls were built to protect food supplies from nomadic raiders who found readily available supplies of food an irresistible attraction. The existence of a granary made necessary the provision of a wall or the granary would be pillaged quickly. A small wall represents the defense provided by a refuge. The modest investment in a wooden palisade or simple wall of dirt stopped the casual raider, but would not seriously delay a large army set on destroying or capturing a refuge.

Medium Wall

Age: Bronze

Prerequisites: Build Town Center, build Granary, research Small Wall, upgrade to Medium Wall.

Upgrade cost: 180 food, 100 stone

Cost: 5 stone

Hit points: 300

Upgrade of: Small Wall

Upgrade at: Granary
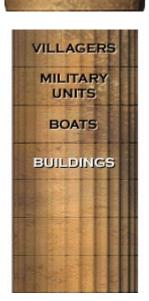
The Medium Wall has more hit points than the Small Wall. The Medium Wall can be upgraded to the Fortification.

Walls are defensive structures that can be built around your empire or important areas. Villagers and military units cannot move through standing walls, however, they can attack the walls. Stone Throwers, Catapults, Heavy Catapults, Ballistas, and the Helepolis are particularly effective for destroying walls.

Researching Architecture increases the hit points and decreases the construction time of this wall.

One of the earliest human settlements yet discovered is the city of Jericho near the Jordan River in modern Israel. This site from 7000 BC is remarkable for possessing a stone masonry wall, dry moat around the wall, and a tower. At an astonishingly early date, Jericho demonstrated that the ancients understood principles of fortification that would carry forward essentially unchanged until the development of gunpowder. The Medium Wall is a defensive structure built of stone or other substantial construction to withstand a protracted attack.

Fortification

Age: Iron

Prerequisites: Build Town Center, build Granary, research Small Wall, upgrade to Medium Wall, upgrade to Fortification.

Upgrade cost: 300 food, 175 stone

Cost: 5 stone

Hit points: 400

Upgrade of: Medium Wall

Upgrade at: Granary
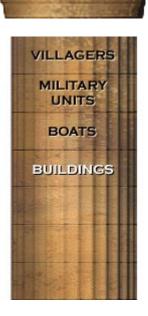
The Fortification is the ultimate wall. It has more hit points than the Medium Wall.

Walls are defensive structures that can be built around your empire or important areas. Villagers and military units cannot move through standing walls, however, they can attack the walls. Stone Throwers, Catapults, Heavy Catapults, Ballistas, and the Helepoplis are particularly effective for destroying walls.

Researching Architecture increases the hit points and decreases the construction time of this wall.

The great civilizations of ancient times built ever larger fortifications to protect their important cities and frontiers. Herodotus reported that the walls of Babylon were sufficiently thick that a chariot could be driven on them around the city. Archaeology indicates that large walls were not invulnerable—every great ancient city appears to have been stormed eventually—but only a large and well-equipped army could surmount them.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS
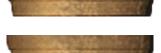
Watch Tower

Age: Tool

Prerequisites: Build Town Center, build Granary, research Watch Tower.

Research cost: 50 food

Cost: 150 stone

Hit points: 100

Attack: 3

Armor: –

Range: 5

Special: Fire rate once/1.5 seconds.

Research at: Granary

The Watch Tower is the weakest of the towers. Upgrades include the Sentry Tower, Guard Tower, and Ballista Tower.

Towers are defensive structures that fire missiles at enemy villagers and military units within range.

Researching Architecture increases the hit points and decreases the construction time of this tower. Alchemy increases attack strength. Ballistics increases accuracy. Woodworking, Artisanship, and Craftsmanship increase range.

The tower discovered on the wall at the ancient site of Jericho served several purposes. It extended the visual range of lookouts that would be watching for the approach of raiders and other visitors. An early warning might have been the difference between a successful defense and the fall of the town. The tower was a superior firing position for archery. Bowmen shooting down had an advantage in range and penetration power of arrows versus enemies shooting up. Enemies hiding at the bottom of the wall may have remained visible to archers in the tower. The tower itself was an independent bastion that could serve as the defensive position of last resort if the wall was carried. The Watch Tower was a simple tower, easily built, and intended mainly to give early warning.

Sentry Tower

Age: Bronze

Prerequisites: Build Town Center, build Granary, research Watch Tower, upgrade to Sentry Tower.

Upgrade cost: 120 food, 50 stone

Cost: 150 stone

Hit points: 150

Attack: 4

Armor: –

Range: 6

Special: Fire rate once/1.5 seconds.

Upgrade of: Watch Tower

Upgrade at: Granary

The Sentry Tower has more hit points, attack strength, and range than the Watch Tower. The Sentry Tower can be upgraded to the Guard Tower.

Towers are defensive structures that fire missiles at enemy villagers and military units within range.

Researching Architecture increases the hit points and decreases the construction time of this tower. Alchemy increases attack strength. Ballistics increases accuracy. Woodworking, Artisanship, and Craftsmanship increase range.

The tower discovered on the wall at the ancient site of Jericho served several purposes. It extended the visual range of lookouts that would be watching for the approach of raiders and other visitors. An early warning might have been the difference between a successful defense and the fall of the town. The tower was a superior firing position for archery. Bowmen shooting down had an advantage in range and penetration power of arrows versus enemies shooting up. Enemies hiding at the bottom of the wall may have remained visible to archers in the tower. The tower itself was an independent bastion that could serve as the defensive position of last resort if the wall was carried. The Sentry Tower was an improved fortification of strong materials and designed for defense.

Guard Tower

Age: Iron

Prerequisites: Build Town Center, build Granary, research Watch Tower, upgrade to Sentry Tower, upgrade to Guard Tower.

Upgrade cost: 300 food, 100 stone

Cost: 150 stone

Hit points: 200

Attack: 6

Armor: –

Range: 7

Special: Fire rate once/1.5 seconds.

Upgrade of: Sentry Tower

Upgrade at: Granary

The Guard Tower has more hit points, attack strength, and range than the Sentry Tower. The Guard Tower can be upgraded to the Ballista Tower.

Towers are defensive structures that fire missiles at enemy villagers and military units within range.

Researching Architecture increases the hit points and decreases the construction time of this tower. Alchemy increases attack strength. Ballistics increases accuracy. Woodworking, Artisanship, and Craftsmanship increase range.

The tower discovered on the wall at the ancient site of Jericho served several purposes. It extended the visual range of lookouts that would be watching for the approach of raiders and other visitors. An early warning might have been the difference between a successful defense and the fall of the town. The tower was a superior firing position for archery. Bowmen shooting down had an advantage in range and penetration power of arrows versus enemies shooting up. Enemies hiding at the bottom of the wall may have remained visible to archers in the tower. The tower itself was an independent bastion that could serve as the defensive position of last resort if the wall was carried. The Guard Tower was a superior fortification, well-designed for holding out against attack and for bringing weapons to bear on an attacker.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Ballista Tower

Age: Iron

Prerequisites: Build Town Center, build Granary, research Watch Tower, upgrade to Sentry Tower, upgrade to Guard Tower, research Ballistics, upgrade to Ballista Tower.

Upgrade cost: 1800 food, 750 stone

Cost: 150 stone

Hit points: 200

Attack: 20

Armor: –

Range: 7

Special: Fire rate once/3 seconds.

Upgrade of: Guard Tower

Upgrade at: Granary

The Ballista Tower is the ultimate tower. It has more attack strength than the Guard Tower. You must research Ballistics before you can upgrade to the Ballista Tower.

Towers are defensive structures that fire missiles at enemy villagers and military units within range.

Researching Architecture increases the hit points and decreases the construction time of this tower. Alchemy increases attack strength. Ballistics increases accuracy. Woodworking, Artisanship, and Craftsmanship increase range.

The tower discovered on the wall at the ancient site of Jericho served several purposes. It extended the visual range of lookouts that would be watching for the approach of raiders and other visitors. An early warning might have been the difference between a successful defense and the fall of the town. The tower was a superior firing position for archery. Bowmen shooting down had an advantage in range and penetration power of arrows versus enemies shooting up. Enemies hiding at the bottom of the wall may have remained visible to archers in the tower. The tower itself was an independent bastion that could serve as the defensive position of last resort if the wall was carried. The Ballista Tower was the ultimate defensive fortification of the ancient era. It could withstand a major attack and was equipped and designed to take a heavy toll on attackers.

Boats

Fishing

Fishing Boat

Fishing Ship

Trade

Trade Boat

Merchant Ship

Transport

Light Transport

Heavy Transport

War

Scout Ship

War Galley

Trireme

Catapult Trireme

Juggernaught

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Fishing Boat

Age: Stone

Prerequisites: Build Town Center, build Dock.

Cost: 50 wood

Hit points: 45

Attack: –

Armor: –

Range: –

Speed: Medium

Special: Boats are twice as resistant to conversion as other units.

Build at: Dock

The Fishing Boat provides food by gathering fish and depositing them at the Dock. The cargo capacity of a Fishing Boat is greater than the carrying capacity of a villager. The Fishing Boat can be upgraded to the Fishing Ship.

The Fishing Boat represents a small, primitive vessel for use by one or a few fishermen. The first boats were probably dugout canoes, made from a single large log. These were excavated by fire and adze. Despite the passage of time and great technological advances in all areas, there are more log-hull boats in use today than of any other single type.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS
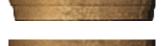
Fishing Ship

Age: Bronze
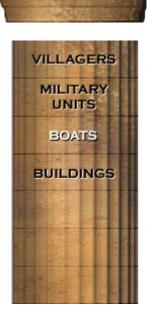
Prerequisites: Build Town Center, build Dock, upgrade to Fishing Ship.

Upgrade cost: 50 food, 100 wood

Cost: 50 wood

Hit points: 75

Attack: –

Armor: –

Range: –

Speed: Fast

Special: Boats are twice as resistant to conversion as other units.

Upgrade of: Fishing Boat

Build at: Dock

The Fishing Ship has more hit points and is faster than the Fishing Boat.

The never-ending quest for food eventually enticed humans out onto lakes, rivers, and oceans in search of fish. Fish of greater size and variety, and fish in greater quantity were often found in deeper off-shore waters. Fishing ships, larger than small canoes, were developed to control larger nets. Fishing ships were able to hold greater quantities of processed fish (cleaned and salted at sea) before return to land was required.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Trade Boat

Age: Stone

Prerequisites: Build Town Center, build Dock.

Cost: 100 wood

Hit points: 200

Attack: –

Armor: –

Range: –

Speed: Fast

Special: Boats are twice as resistant to conversion as other units.

Build at: Dock

The Trade Boat lets you trade with other civilizations to increase your stockpile of gold. The Trade Boat can be upgraded to the Merchant Ship.

Small boats were used by Stone-Age peoples for trading across rivers, lakes, and oceans. We know, for example, that tool stone found on Aegean Islands was brought to the mainland and other islands by traders long before large seagoing boats existed. Primitive trading boats were usually dugout canoes, papyrus bundles, or hide boats with a limited cargo capacity. They probably carried only limited quantities of valuable trade goods, such as carvings, ivory, furs, tool stone, decorative minerals, and amber. Large bulk cargos could not be carried profitably in small trading boats.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Merchant Ship

Age: Bronze

Prerequisites: Build Town Center, build Dock, upgrade to Merchant Ship.

Upgrade cost: 200 food, 75 wood

Cost: 100 wood

Hit points: 250

Attack: —

Armor: —

Range: —

Speed: Fast

Special: Boats are twice as resistant to conversion as other units.

Upgrade of: Trade Boat

Build at: Dock

The Merchant Ship lets you trade with other civilizations to increase your stockpile of gold. It is faster and has more hit points than the Trade Boat.

As civilization spread around the Mediterranean Sea, Indian Ocean, and China Sea, larger trading ships came into use to carry bulk cargos such as olive oil from Greece, cedar wood from Lebanon, grain from Egypt, and rice from China. Typical ancient Merchant Ships had keels and were built of planks, but did not have interior framing. They carried a single mast for a mainsail and were steered with a large paddle. Their broad beam allowed for cargos far beyond those of dugout canoes. Recent underwater discoveries of ancient merchant ships indicate they had good sailing qualities and required only a small crew.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS
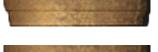
Light Transport

Age: Tool
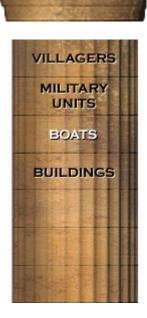
Prerequisites: Build Town Center, build Dock.

Cost: 150 wood

Hit points: 150

Attack: –

Armor: –

Range: –

Speed: Medium

Special: Boats are twice as resistant to conversion as other units.

Build at: Dock

The Light Transport lets you transport up to five villagers, military units, or Artifacts across water. The Light Transport can be upgraded to the Heavy Transport.

The earliest use of boats in war was probably to carry men across rivers, lakes, or seas to raid and plunder. The most suitable boat for this purpose was built as a compromise between speed and capacity. Raiders did not want to spend long periods in boats making a crossing and needed to surprise their enemies. The boat also had to carry a reasonable number of raiders and have room for any booty to be brought back. The fastest boats of ancient times were galleys powered by sails when possible but mainly by oars. The Greek penteconter with 50 oars was a common transport for troops. In most cases, the crew of oarsmen became raiders when they reached their destination.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS
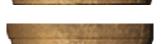
Heavy Transport

Age: Iron

Prerequisites: Build Town Center, build Dock, upgrade to Heavy Transport.

Upgrade cost: 150 food, 125 wood

Cost: 150 wood

Hit points: 200

Attack: –

Armor: –

Range: –

Speed: Fast

Special: Boats are twice as resistant to conversion as other units.

Upgrade of: Light Transport

Build at: Dock

The Heavy Transport lets you transport up to ten villagers, military units, or Artifacts across water. The Heavy Transport has more hit points, is faster, and carries more units than the Light Transport.

Ships built for carrying military units replaced smaller galleys when armies grew larger and targets became more valuable and better defended. It became necessary to move ever-larger armies for invasion, and to bring siege engines and supplies along for extended sieges of coastal cities. The Heavy Transport represents a larger sailing ship, something like a Merchant Ship, built mainly for capacity at the expense of speed.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS
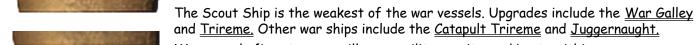
Scout Ship

Age: Tool

Prerequisites: Build Town Center, build Dock.

Cost: 135 wood

Hit points: 120

Attack: 5

Armor: –

Range: 5

Speed: Fast

Special: Boats are twice as resistant to conversion as other units.
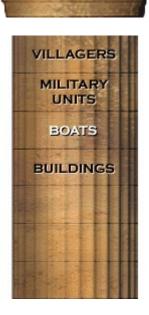
Build at: Dock

The Scout Ship is the weakest of the war vessels. Upgrades include the War Galley and Trireme. Other war ships include the Catapult Trireme and Juggernaught.

War vessels fire at enemy villagers, military units, and boats within range.

Researching Alchemy increases attack strength. Ballistics increases accuracy. Woodworking, Artisanship, and Craftsmanship increase range.

The first true warships built to attack and sink other ships were galleys with a heavy ram mounted at the front. The warship attempted to ram an enemy ship and stave in its hull, causing it to take on water if not sink. Early warships were almost oar-powered torpedos, consisting of a light, floating hull manned by oarsmen. A sail, if present, was used only in transit, not in battle.

War Galley

Age: Bronze

Prerequisites: Build Town Center, build Dock, upgrade to War Galley.

Upgrade cost: 150 food, 75 wood

Cost: 135 wood

Hit points: 160

Attack: 8

Armor: –

Range: 6

Speed: Fast

Special: Boats are twice as resistant to conversion as other units.

Upgrade of: Scout Ship

Build at: Dock

The War Galley has more hit points, attack strength, and range than a Scout Ship. The War Galley can be upgraded to the Trireme.

War vessels fire at enemy villagers, military units, and boats within range.

Researching Alchemy increases attack strength. Ballistics increases accuracy. Woodworking, Artisanship, and Craftsmanship increase range.

The appearance of the ram triggered an arms race in ship design. Hulls were strengthened to support ever-heavier rams on the bow. As hulls grew larger, more oarsmen were required to provide power. A deck was added and a second group of oarsmen was placed there. This increased power without increasing length, but the deck made the ship somewhat more unstable. A ship with two levels of rowers was called a bireme.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Trireme

Age: Iron

Prerequisites: Build Town Center, build Dock, upgrade to War Galley, upgrade to Trireme.

Upgrade cost: 250 food, 100 wood

Cost: 135 wood

Hit points: 200

Attack: 12

Armor: –

Range: 7

Speed: Fast

Special: Boats are twice as resistant to conversion as other units; fire rate once/2 seconds.

Upgrade of: War Galley

Build at: Dock

The Trireme has more hit points, attack strength, and range than a War Galley. The Trireme cannot be upgraded. However, you can research the Catapult Trireme, which is stronger than the Trireme.

War vessels fire at enemy villagers, military units, and boats within range.

Researching Alchemy increases attack strength. Ballistics increases accuracy. Woodworking, Artisanship, and Craftsmanship increase range.

Ancient ship designers tried numerous tricks to get more power for warships, including putting more men on single oars. The most successful design was the trireme, three tiers of single rowers per side. This ship provided reasonable maneuverability and speed. It appeared around 600 BC and made up the bulk of Mediterranean navies for several hundred years after 500 BC.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Catapult Trireme

Age: Iron

Prerequisites: Build Town Center, build Dock, upgrade to War Galley, upgrade to Trireme, research Catapult Trireme.

Research cost: 300 food, 100 wood

Cost: 135 wood, 75 gold

Hit points: 120

Attack: 35

Armor: –

Range: 9

Speed: Fast

Special: Boats are twice as resistant to conversion as other units; fire rate once/5 seconds; small damage area.

Build at: Dock
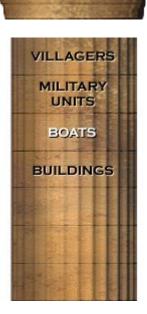
The Catapult Trireme is not an upgrade of the Trireme. It is a separate vessel with fewer hit points and a slower fire rate than a Trireme but it has much more attack strength, range, and is armed with a Catapult, which can fire at a location instead of at a particular unit. The Catapult Trireme can be upgraded to the Juggernaught.

War vessels fire at enemy villagers, military units, and boats within range.

Researching Alchemy increases attack strength. Ballistics increases accuracy. Engineering increases range.

The ultimate warships of antiquity were advances on the trireme that occurred after the death of Alexander the Great. These ships were first broadened so that multiple rowers could apply power to each oar. Based on limited descriptions and detailed figures for crew and rowers, it is believed that the largest ships of this period may have had catamaran hulls. The broadening of ships and decks added weight and further reduced speed and maneuverability, but increased stability. Decks supported catapult artillery and large marine contingents. Ships engaged each other primarily with missile fire and boarding.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Juggernaught

Age: Iron

Prerequisites: Build Town Center, build Dock, upgrade to War Galley, upgrade to Trireme, research Catapult Trireme, research Engineering, upgrade to Juggernaught.

Upgrade cost: 2000 food, 900 wood

Cost: 135 wood, 75 gold

Hit points: 200

Attack: 35

Armor: –

Range: 10

Speed: Fast

Special: Boats are twice as resistant to conversion as other units; fire rate once/5 seconds; medium damage area.

Upgrade of: Catapult Trireme

Build at: Dock

The Juggernaught has more hit points and range and causes damage to a larger area than the Catapult Trireme. Like the Catapult Trireme, the Juggernaught is armed with a Catapult, which can fire at a location instead of at a particular unit. You must research Engineering before you can upgrade to the Juggernaught.

War vessels fire at enemy villagers, military units, and boats within range.
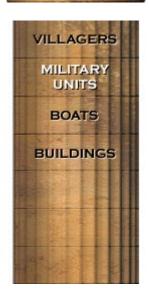
Researching Alchemy increases attack strength. Ballistics increases accuracy. Engineering increases range.

The most remarkable advances in war ships appeared on the Mediterranean before the conquest of the entire region by Rome. These ships could reach enormous size, carrying crews of several thousand rowers and marines. They fought by firing catapults at each other until close enough to grapple and board. The largest were too slow to effectively ram each other. Because of their size and slowness they could not operate far from shore and needed substantial support from supply ships carrying food and water for the crew. The largest were show ships, built in an arms race that emphasized size and expense versus practicality.

Military units

Priest

Infantry

Clubman

Axeman

Short Swordsman

Broad Swordsman

Long Swordsman

Legion

Hoplite

Phalanx

Centurion

Archers

Bowman

Improved Bowman

Composite Bowman

Chariot Archer

Elephant Archer

Horse Archer

Heavy Horse Archer

Cavalry

Scout

Chariot

Cavalry

Heavy Cavalry

Cataphract

War Elephant

Siege Weapons

Stone Thrower

Catapult

Heavy Catapult

Ballista

Helepolis

Clubman

Age: Stone

Prerequisites: Build Town Center, build Barracks.

Cost: 50 food

Hit points: 40

Attack: 3

Armor: –

Range: –

Speed: Medium

Train at: Barracks

The Clubman is the weakest of the infantry units. The Clubman can be upgraded to the Axeman. Other infantry units include the Short Swordsman, Broad Swordsman, Long Swordsman, and Legion.

Researching Toolworking, Metalworking, and Metallurgy increases attack strength. Leather Armor, Scale Armor, and Chain Mail increase armor. The Bronze Shield and Iron Shield increase piercing armor.

The first soldiers were local people called up for military duty in times of emergency. These temporary soldiers were commonly armed with a mace, usually a club with a stone head. This was an inexpensive weapon and one that could be used effectively with a minimum of training. Clubmen were at a disadvantage, however, when facing the better-trained and armed professional soldiers that eventually appeared to defend the early farming civilizations. The mace had little practical use other than in combat against other humans. It appeared long before the first civilizations, indicating that the roots of warfare go back far into prehistoric times.

VILLAGERS

MILITARY
UNITS

BOATS

BUILDINGS

Axeman

Age: Tool

Prerequisites: Build Town Center, build Barracks, upgrade to Battle Axe.

Upgrade cost: 100 food

Cost: 50 food

Hit points: 50

Attack: 5

Armor: —

Range: —

Speed: Medium

Upgrade of: Clubman

Train at: Barracks

The Axeman has more hit points and attack strength than the Clubman. The Axeman cannot be upgraded. However, you can research the Short Swordsman, which is stronger than the Axeman.
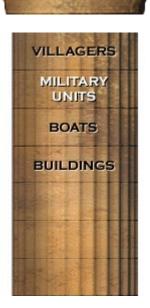
Researching Toolworking, Metalworking, and Metallurgy increases attack strength. Leather Armor, Scale Armor, and Chain Mail increase armor. The Bronze Shield and Iron Shield increase piercing armor.

The increasing population and wealth of the earliest civilizations made it possible to support standing armies available at all times for defense and attacking neighbors. The first professional armies were probably built in Sumeria and Egypt. These early civilizations had much to protect and were sufficiently wealthy to provide protection. Sumerian artwork from around 2500 BC provides evidence of an early army, in this case lines of soldiers, possibly in formation, equipped with identical armor, helmets, and weapons.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Short Swordsman

Age: Bronze

Prerequisites: Build Town Center, build Barracks, research Short Sword.

Research cost: 120 food, 50 gold

Cost: 35 food, 15 gold

Hit points: 60

Attack: 7

Armor: 1

Range: –

Speed: Medium

Train at: Barracks

The Short Swordsman is not an upgrade of the Axeman. It is a separate unit with more hit points, attack strength, and armor than the Axeman. The Short Swordsman can be upgraded to the Broad Swordsman.

Researching Toolworking, Metalworking, and Metallurgy increases attack strength. Leather Armor, Scale Armor, and Chain Mail increase armor. The Bronze Shield and Iron Shield increase piercing armor.

The short sword represents an evolutionary step in infantry weapons. The spear, mace, and axe were relatively easy to manufacture and use, but somewhat cumbersome in actual hand-to-hand combat. Following the discovery of bronze, it became possible to manufacture short swords that were basically enlarged and strengthened knives. These were much easier to wield in hand-to-hand combat and improved the effectiveness of infantry who carried them. Short swords were carried as a second weapon by spearmen or pikemen, such as the Greek hoplites. The most famous short sword of antiquity was the gladius, or Spanish sword, adopted by the Roman legions from the Spanish allies of Carthage. The gladius was especially effective in the dense legion fighting formations that pressed tightly against their opponents and restricted movement.

Broad Swordsman

Age: Bronze

Prerequisites: Build Town Center, build Barracks, research Short Sword, upgrade to Broad Sword.

Upgrade cost: 140 food, 50 gold

Cost: 35 food, 15 gold

Hit points: 70

Attack: 9

Armor: 1

Range: –

Speed: Medium

Upgrade of: Short Swordsman

Train at: Barracks

The Broad Swordsman has more hit points, attack strength, and armor than the Short Swordsman. The Broad Swordsman can be upgraded to the Long Swordsman.

Researching Toolworking, Metalworking, and Metallurgy increases attack strength. Leather Armor, Scale Armor, and Chain Mail increase armor. The Bronze Shield and Iron Shield increase piercing armor.

The appearance of bronze short swords led to further advances in weaponry as competing cultures sought an advantage in military technology over their neighbors. Where the early short sword was primarily a piercing weapon, the broad sword evolved as a slashing weapon. The width of the blade increased strength sufficiently to support a slashing attack that could cut into armor and break short swords designed for stabbing.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Long Swordsman

Age: Iron

Prerequisites: Build Town Center, build Barracks, research Short Sword, upgrade to Broad Sword, upgrade to Long Sword.

Upgrade cost: 160 food, 50 gold

Cost: 35 food, 15 gold

Hit points: 80

Attack: 11

Armor: 2

Range: –

Speed: Medium

Upgrade of: Broad Swordsman

Train at: Barracks

The Long Swordsman has more hit points, attack strength, and armor than the Broad Swordsman. The Long Swordsman can be upgraded to the Legion.

Researching Toolworking, Metalworking, and Metallurgy increases attack strength. Leather Armor, Scale Armor, and Chain Mail increase armor. The Bronze Shield and Iron Shield increase piercing armor.

The long sword represents the culmination of infantry weapon development in antiquity. It was designed for both piercing and slashing, combining the best of both the short and broad swords. The long sword was made possible first by advances in bronzeworking and improved by the discovery of iron. Some historians believe that the development of long swords by barbarian cultures was a key factor in the catastrophe of 1200 BC, when most of the civilized cultures of the Mediterranean and Middle East were overrun. The long sword in various forms remained an important military weapon until the advent of gunpowder.

Legion

Age: Iron

Prerequisites: Build Town Center, build Barracks, research Short Sword, upgrade to Broad Sword, upgrade to Long Sword, research Fanaticism, upgrade to Legion.

Upgrade cost: 1400 food, 600 gold

Cost: 35 food, 15 gold

Hit points: 160

Attack: 13

Armor: 2

Range: −

Speed: Medium

Upgrade of: Long Swordsman

Train at: Barracks

The Legion is the ultimate infantry unit. The Legion has many more hit points and more attack strength than the Long Swordsman. You must research Fanaticism before you can upgrade to Legion.

Researching Toolworking, Metalworking, and Metallurgy increases attack strength. Leather Armor, Scale Armor, and Chain Mail increase armor. The Bronze Shield and Iron Shield increase piercing armor.

The Roman legion was the ultimate military formation of antiquity. The legion was a 4200-man unit at full strength, broken down into 120-man units called maniples. Most of the maniples went into battle as separate blocks of men in a square formation that looked something like a checkerboard from above. Ten maniples fought as skirmishers in loose order to the front of the first line of blocks. They attacked the enemy infantry line with sling stones, arrows, and javelins as the two armies closed and then fell back between gaps in the blocks. They may have moved to the edges of the battle to protect the Roman line and harass the enemy line. The heavy infantry blocks moved forward, throwing javelins just before the clash. Gaps in the blocks may have been filled in by a second row of blocks containing more experienced soldiers. The third and final row of blocks was the smallest but contained the most experienced veterans who served as the legion's reserve. The basic legion might have attached cavalry, archers, engineers, and artillery, depending on the task before it. At its peak, the Roman Empire had legions deployed all along its frontiers, defending against barbarians, putting down revolts, expanding the empire, and maintaining order.

Hoplite

Age: Bronze

Prerequisites: Build Town Center, build Barracks, build Stable, build Academy.

Cost: 60 food, 40 gold

Hit points: 120

Attack: 17

Armor: 5

Range: —

Speed: Slow

Train at: Academy

The Hoplite is the weakest of the elite infantry units. Upgrades include the Phalanx and Centurion.

Researching Toolworking, Metalworking, and Metallurgy increases attack strength. Leather Armor, Scale Armor, and Chain Mail increase armor. The Bronze Shield and Iron Shield increase piercing armor. Aristocracy increases speed.

Greek infantry soldiers of the Classical Age were called hoplites, from the name of their large shields, called hoplons. For battle they wore a cuirass (breastplate), helmet, and greaves. They were armed with a long spear or pike and sword. Hoplite armies fought each other hand-to-hand in the dense phalanx formation that faced the enemy with a bristling wall of spear points staggered at chest level. Fighting at close range in such a formation required a commitment to training and discipline that became a way of life. Hoplites were the best infantry soldiers in the world for many centuries until being supplanted by the more flexible and functional Roman legionnaires.

Phalanx

Age: Iron

Prerequisites: Build Town Center, build Barracks, build Stable, build Academy, upgrade to Phalanx.

Upgrade cost: 300 food, 100 gold

Cost: 60 food, 40 gold

Hit points: 120

Attack: 20

Armor: 7

Range: –

Speed: Slow

Upgrade of: Hoplite

Train at: Academy

The Phalanx has more attack strength and armor than the Hoplite. The Phalanx can be upgraded to the Centurion.

Researching Toolworking, Metalworking, and Metallurgy increases attack strength. Leather Armor, Scale Armor, and Chain Mail increase armor. The Bronze Shield and Iron Shield increase piercing armor. Aristocracy increases speed.

The phalanx was a Greek heavy infantry formation used from about 800 BC to the conquest of Greece by the Romans in the second century BC. The Greek infantry, called hoplites, formed a square that could quickly face in any of four directions. Each man carried a pike or spear up to 12 feet in length. As the formation advanced, it presented an imposing wall of spear points to its front. Hoplites carried a large shield and wore a bronze helmet, cuirass (breastplate), and greaves. All free men in the Greek city-states trained in the phalanx. The discipline and drill required to make the phalanx work permeated the entire Greek culture. Greek infantry fighting from the phalanx was the finest in the western world for several centuries. No other infantry faced it in hand-to-hand combat and won until the new tactics of combined arms made it obsolete. The last great success of the phalanx was in Alexander the Great's campaign against the Persians, although in that army it fought as part of a combined arms army.

Centurion

Age: Iron

Prerequisites: Build Town Center, build Barracks, build Stable, build Academy, upgrade to Phalanx, research Aristocracy, upgrade to Centurion.

Upgrade cost: 1800 food, 700 gold

Cost: 60 food, 40 gold

Hit points: 160

Attack: 30

Armor: 8

Range: –

Speed: Slow

Upgrade of: Phalanx

Train at: Academy

The Centurion is the ultimate elite infantry unit. It has more hit points, attack strength, and armor than the Phalanx. You must research Aristocracy before you can upgrade to the Centurion.

Researching Toolworking, Metalworking, and Metallurgy increases attack strength. Leather Armor, Scale Armor, and Chain Mail increase armor. The Bronze Shield and Iron Shield increase piercing armor. Aristocracy increases speed.

The smallest tactical unit in the Roman army trusted with independent maneuver was the 120-man maniple. Each maniple was commanded by a centurion, a veteran promoted from the ranks after demonstrating bravery, skill, discipline, and leadership. The maniple was roughly equivalent to the modern infantry company and the centurion was a combination of modern infantry captain and top sergeant. Centurions were the backbone of the legions that built and defended the Roman Empire.

Bowman

Age: Tool

Prerequisites: Build Town Center, build Barracks, build Archery Range.

Cost: 40 food, 20 wood

Hit points: 35

Attack: 3

Armor: 0

Range: 5

Speed: Medium

Train at: Archery Range

The Bowman is the weakest of the archers. The Bowman cannot be upgraded. However, you can research the Improved Bowman, which is stronger than the Bowman. Other archers include the Chariot Archer, Elephant Archer, and Horse Archer.

Archers fire arrows at enemy villagers, military units, boats, and buildings within their range.

Researching Alchemy increases attack strength. Ballistics increases accuracy. Leather Armor, Scale Armor, and Chain Mail increase armor. Woodworking, Artisanship, and Craftsmanship increase range.

The bow was an important military weapon from the time of the first armies, being easily adapted from hunting animals to warfare. Archers required less discipline and leadership in battle because they were not expected to engage in hand-to-hand combat, a terrifying experience. Bowmen fought from a distance on the battlefield, from behind walls or other cover, and from ambush. They were usually not decisive in battle on the attack because they could not physically take ground from the enemy like infantry could. They acted mainly as defensive troops and as light troops that disrupted enemy formations prior to the decisive moment when the infantry clashed. If barrages of arrows could cause casualties and lower morale of the enemy prior to the clash, friendly infantry had a better chance of breaking the will of the enemy infantry and being victorious.

Improved Bowman

Age: Bronze

Prerequisites: Build Town Center, build Barracks, build Archery Range, research Improved Bow.

Research cost: 140 food, 80 wood

Cost: 40 food, 20 gold

Hit points: 40

Attack: 4

Armor: 0

Range: 6

Speed: Medium

Train at: Archery Range

The Improved Bowman is not an upgrade of the Bowman. It is a separate unit with more hit points, attack strength, and range than the Bowman. The Improved Bowman can be upgraded to the Composite Bowman.

Archers fire arrows at enemy villagers, military units, boats, and buildings within their range.

Researching Alchemy increases attack strength. Ballistics increases accuracy. Leather Armor, Scale Armor, and Chain Mail increase armor. Woodworking, Artisanship, and Craftsmanship increase range.

The simple bow was improved by using better materials and by better training. Employing better wood or strips of laminated wood increased the tensile strength of the bow, increasing power and thus range. Arrows were improved also by such changes as metal arrowheads. In modern times, hundreds of bronze arrowheads were recovered from an archaeological excavation of the battlefield at Thermopylae. On this site, a Spartan force under Leonidas had perished under a hail of Persian arrows after delaying the huge Persian army for many days.

Composite Bowman

Age: Bronze

Prerequisites: Build Town Center, build Barracks, build Archery Range, research Improved Bow, upgrade to Composite Bow.

Upgrade cost: 180 food, 100 wood

Cost: 40 food, 20 gold

Hit points: 45

Attack: 5

Armor: 0

Range: 7

Speed: Medium

Upgrade of: Improved Bowman

Train at: Archery Range

The Composite Bowman has more hit points, attack strength, and range than the Improved Bowman. Other archery units include the Horse Archer and Elephant Archer.

Archers fire arrows at enemy villagers, military units, boats, and buildings within their range.

Researching Alchemy increases attack strength. Ballistics increases accuracy. Leather Armor, Scale Armor, and Chain Mail increase armor. Woodworking, Artisanship, and Craftsmanship increase range.

The composite bow was developed in Asia and was also known as the oriental or recurved bow. It reached the Mediterranean and Middle East by the beginning of the second millennium BC. It was made of layers of wood glued together rather than a single piece. The composite material was then bent outward at each end to increase tension. The result was a very powerful bow that doubled the effective range of the short bow. Egyptian engravings depicting the Battle of Kadesh show Rameses II and other Egyptian archers using composite bows.

Chariot Archer

Age: Bronze

Prerequisites: Build Town Center, build Barracks, build Archery Range, research Wheel.

Cost: 40 food, 70 wood

Hit points: 70

Attack: 4

Armor: 0

Range: 7

Speed: Fast

Special: High resistance to conversion; triple attack against Priest.

Train at: Archery Range

The Chariot Archer is a powerful archery unit that combines the speed and mobility of the Chariot and the attack strength of the Improved Bowman. Other mounted archery units include the Elephant Archer, Horse Archer, and Heavy Horse Archer. You must research the Wheel before you can train Chariot Archers.

Researching Nobility increases hit points. Researching Alchemy increases attack strength. Ballistics increases accuracy. Leather Armor, Scale Armor, and Chain Mail increase armor. Woodworking, Artisanship, and Craftsmanship increase range.

Around 1700 BC, two existing technologies of military consequence, the chariot and the bow, were merged to create a fearsome new military weapon—the chariot archer. Armored archers carried in fast chariots dominated the battlefields of the civilized world for the next 500 years and remained useful for some time after that. In the open ground of the settled plains and river valleys, the chariot archer was devastating due to its speed, mass, and firepower. Chariot archers were typified by the Egyptian nobility and pharaohs of the New Kingdom, 1552-1069 BC, who prided themselves on their archery. The first recorded battle of history, Megiddo in 1460 BC, was fought with chariots carrying archers.

The chariot archer was the dominating battlefield weapon from China to Greece from about 1600 to 1200 BC, according to the historical and archaeological record. The long reign of chariot armies was due to several factors, including most importantly the placement of a composite bow archer in the basket with the driver and using the chariot as a mobile firing platform. The fast-firing chariot archer was devastating against slow, poorly armored infantry in the open areas of the civilized cultures. The glorious vision of elite archers from the nobility fighting from their expensive chariots and wheeling around the battlefields at will pervaded

all civilized cultures of the time.

Elephant Archer

Age: Iron
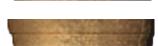
Prerequisites: Build Town Center, build Barracks, build Archery Range.

Cost: 180 food, 60 gold

Hit points: 600

Attack: 5

Armor: 0

Range: 7

Speed: Slow

Train at: Archery Range

The Elephant Archer combines the hit points of the War Elephant and the attack strength and range of the Composite Bowman. Other mounted archery units include the Chariot Archer, Horse Archer, and Heavy Horse Archer.

Researching Alchemy increases attack strength. Ballistics increases accuracy. Leather Armor, Scale Armor, and Chain Mail increase armor. Woodworking, Artisanship, and Craftsmanship increase range.

Attempting to use elephants in combat posed a number of problems, including the central one of how the elephant would fight and cause casualties. One answer was to place a box on the elephant's back from which archers could shoot. The archers were protected by the box and could fire down into the melee below. That worked only as long as the elephant remained standing and within range of the enemy. In the years following the death of Alexander the Great, many western kings adorned their armies with elephants but they were rarely effective. Armies of ancient India used elephants more successfully for many centuries.
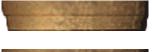
Horse Archer

Age: Iron
Prerequisites: Build Town Center, build Barracks, build Archery Range.
Cost: 50 food, 70 gold
Hit points: 60
Attack: 7
Armor: 0
Piercing Armor: 2
Range: 7
Speed: Fast
Special: +2 piercing armor against Ballista, Helepolis, and missile weapons.
Train at: Archery Range

The Horse Archer is a fast archery unit with strong attack strength and range. The Horse Archer can be upgraded to the Heavy Horse Archer. Other mounted archery units include the Chariot Archer and Elephant Archer.

Researching Nobility increases hit points. Researching Alchemy increases attack strength. Ballistics increases accuracy. Leather Armor, Scale Armor, and Chain Mail increase armor. Woodworking, Artisanship, and Craftsmanship increase range.

The chariot archer was replaced eventually on many ancient battlefields by horse archers. This transition took place during the dark age following 1200 BC. Mounted warriors fighting with composite bows made up many of the barbarian armies on the Asia steppes. This type of unit was embraced by the Assyrians first and eventually by their rivals. Two horse archers had twice the firepower of one chariot archer, were much more flexible in where they could go on the battlefield, were only half eliminated by the loss of one horse, and avoided the expense of the chariot itself. Horse archers rarely dominated fighting as the chariot archers had, however, because advances in armor and tactics relegated horse archers to a supportive role. The hordes of horse archers employed by the Persians against Alexander, for example, were no match for his Companion cavalry, heavy Greek infantry, and skirmish troops. The Great Wall of China was built to restrict the movements of barbarian horse archers from the north.

Heavy Horse Archer

Age: Iron

Prerequisites: Build Town Center, build Barracks, build Archery Range, research Chain Mail for Archers, upgrade to Heavy Horse Archer.

Upgrade cost: 1750 food, 800 gold

Cost: 50 food, 70 gold

Hit points: 90

Attack: 8

Armor: 0

Piercing Armor: 2

Range: 7

Speed: Fast

Special: +2 piercing armor against Ballista, Helepolis, and missile weapons.

Upgrade of: Horse Archer

Train at: Archery Range

The Heavy Horse Archer has more hit points and attack strength than the Horse Archer. You must research Chain Mail for Archers before you can train the Heavy Horse Archer.

Researching Nobility increases hit points. Researching Alchemy increases attack strength. Ballistics increases accuracy. Leather Armor, Scale Armor, and Chain Mail increase armor. Woodworking, Artisanship, and Craftsmanship increase range.

In a few armies of the late ancient period the Horse Archer was equipped with helmet and limited body armor. This made the archer less vulnerable to arrows himself. The Heavy Horse Archer could get closer to the enemy and do more damage with bow fire with less risk to himself. Heavy Horse Archers were not a common unit, however. They were difficult to train, except for those cultures who were horse archers by common practice. Body armor for archers was a luxury that most armies could not afford.

Stone Thrower

Age: Bronze

Prerequisites: Build Town Center, build Barracks, build Archery Range, build Siege Workshop.

Cost: 180 wood, 80 gold

Hit points: 75

Attack: 50

Armor: –

Range: 10

Speed: Slow

Special: Fire rate once/5 seconds; small damage area; minimum range 2.

Build at: Siege Workshop

The Stone Thrower is the weakest of the siege weapons. Upgrades include the Catapult and Heavy Catapult. Other siege weapons include the Ballista and Helepolis.

Siege weapons are used to attack military units, buildings, towers, and walls.

Researching Alchemy increases attack strength. Ballistics increases accuracy. Engineering increases range.

The stone thrower was an artillery weapon based on the principle of the lever. The stone thrower fired a heavy missile, usually a large stone or stone wrapped in burning oily rags. The missile was placed in a large basket at the end of the throwing arm. Tension was built up on the other end of the arm while the throwing basket was held taut against a fulcrum. When released, the throwing arm swung up and forward until checked, throwing the missile. Stone throwers were used primarily against fixed positions, especially cities and fortifications. Stones were used to knock down walls to open the way for an infantry assault. Fireballs set wood rubble on fire, burning out the defenders. Small stone throwers were also used on the battlefield to disrupt massed enemy formations, although the enemy rarely offered easy targets within range. The stone thrower was invented around 400 BC by Greeks seeking to capture an island fortress off the coast of Sicily.

Catapult

Age: Iron

Prerequisites: Build Town Center, build Barracks, build Archery Range, build Siege Workshop, upgrade to Catapult.

Upgrade cost: 300 food, 250 wood

Cost: 180 wood, 80 gold

Hit points: 75

Attack: 60

Armor: –

Range: 12

Speed: Slow

Special: Fire rate once/5 seconds; medium damage area; minimum range 2.

Upgrade of: Stone Thrower

Build at: Siege Workshop

The Catapult has more attack strength and range and damages a larger area than the Stone Thrower. The Catapult can be upgraded to the Heavy Catapult. Other siege weapons include the Ballista and Helepolis.

Siege weapons are used to attack military units, buildings, towers, and walls.

Researching Alchemy increases attack strength. Ballistics increases accuracy. Engineering increases range.

The stone thrower continued to evolve over time following its invention around 400 BC. Improvements increased the size or range of the missile and the mobility of the catapult (how fast the weapon could be assembled).

Heavy Catapult

Age: Iron

Prerequisites: Build Town Center, build Barracks, build Archery Range, build Siege Workshop, upgrade to Catapult, research Siegecraft, upgrade to Heavy Catapult.

Upgrade cost: 1800 food, 900 wood

Cost: 180 wood, 80 gold

Hit points: 150

Attack: 60

Armor: –

Range: 13

Speed: Slow

Special: Fire rate once/5 seconds; large damage area; minimum range 2.

Upgrade of: Catapult

Build at: Siege Workshop

The Heavy Catapult has many more hit points and more range than the Catapult. You must research Siegecraft before you can upgrade to the Heavy Catapult. Other siege weapons include the Ballista and Helepolis.

Siege weapons are used to attack military units, buildings, towers, and walls.

Researching Alchemy increases attack strength. Ballistics increases accuracy. Engineering increases range.

The heavy catapult was a powerful siege weapon, representing the greatest advance in siege weaponry during ancient times. It was employed against fortifications and on the battlefield. It broke down fortification walls, allowing attackers to break in. On the battlefield, smaller missiles could be fired in a shower against dense formations of soldiers to cause casualties and disrupt morale at long range. Enemy armies that could be softened and shaken before the hand-to-hand clash of infantry were at a decided disadvantage.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Ballista

Age: Iron

Prerequisites: Build Town Center, build Barracks, build Archery Range, build Siege Workshop.

Cost: 100 wood, 80 gold

Hit points: 55

Attack: 40

Armor: –

Range: 9

Speed: Slow

Special: Fire rate once/3 seconds; minimum range 3.

Build at: Siege Workshop

The Ballista can be upgraded to the Helepolis. Other siege weapons include the Catapult and Heavy Catapult.

Ballistas are used to attack military units, buildings, towers, and walls.

Researching Alchemy increases attack strength. Ballistics increases accuracy. Engineering increases range.

The ballista was an early artillery weapon that fired missiles, primarily large bolts or spears. It was used in attacks on cities or fortified positions because it could cause structural damage and casualties from a great distance. When it could be deployed on a battlefield, it was especially useful against dense formations of troops. In this situation, one shot could cause multiple casualties. The ballista was invented in the second half of the first millennium BC, probably by Greek engineers. It functioned like a large crossbow. Tension was built up in the engine by twisting leather, and then released, propelling the missile down a guided trough and into flight.

Helepolis

Age: Iron

Prerequisites: Build Town Center, build Barracks, build Archery Range, build Siege Workshop, research Craftsmanship, upgrade to Helepolis.

Upgrade cost: 1500 food, 1000 wood

Cost: 100 wood, 80 gold

Hit points: 55

Attack: 40

Armor: –

Range: 10

Speed: Slow

Special: Fire rate once/1.5 seconds; minimum range 3.

Upgrade of: Ballista

Build at: Siege Workshop

The Helepolis has more range and a faster fire rate than the Ballista. You must research Craftsmanship before you can upgrade to the Helepolis. Other siege weapons include the Catapult and Heavy Catapult.

The Helepolis is used to attack military units, buildings, towers, and walls.

Researching Alchemy increases attack strength. Ballistics increases accuracy. Engineering increases range.

The Helepolis (Greek for "city killer") was one of the most advanced weapons of antiquity and a remarkable demonstration of ancient engineering ingenuity. It was in fact an automatic siege weapon that fired ballista bolts. The top loading magazine of the helepolis was a horizontal funnel in which were laid bundles of bolts. These were fed by gravity into the chamber of the weapon. A clever gearing mechanism automatically recocked the helepolis and fired. Human operators needed only to keep it loaded and aimed, plus provide power by cranking. The original of the machine was abandoned outside the city of Rhodes when a besieging army withdrew. It has been reconstructed on paper from contemporary sketches and descriptions of that only known example.

Scout

Age: Tool

Prerequisites: Build Town Center, build Barracks, build Stable.

Cost: 100 food

Hit points: 60

Attack: 3

Armor: 0

Range: –

Speed: Fast

Train at: Stable
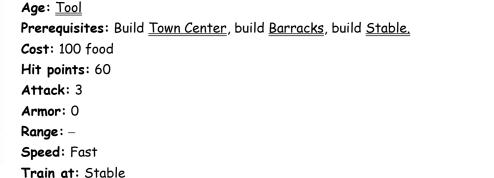
The Scout is the weakest cavalry unit. The Scout cannot be upgraded. However, you can train Cavalry, which is stronger than the Scout. Other cavalry units include Heavy Cavalry, Cataphract, Chariot, and War Elephant.

Researching Nobility increases hit points. Toolworking, Metalworking, and Metallurgy increase attack strength. Leather Armor, Scale Armor, and Chain Mail increase armor.

An important innovation in military tactics was the provision of skirmish, or light, troops that scouted ahead of the main body when an army was on the move. While it was important to form solid, disciplined ranks of spearmen or other infantry for the shock of hand-to-hand combat, these dense formations were vulnerable to surprise. It was the function of scouts to keep the army commander informed of the tactical situation and locate enemies so the main body was brought into combat at the right place and time. At the Battle of Kadesh in 1275 BC, Rameses II of Egypt did not investigate reports that the Hittite army was far to the north. Instead he advanced one of his four divisions across the Orontes River and was attacked while his second was still crossing. Ramesses managed to win the battle, but the lack of proper scouting put his army in jeopardy.

Cavalry

Age: Bronze

Prerequisites: Build Town Center, build Barracks, build Stable.

Cost: 70 food, 80 gold

Hit points: 150

Attack: 8

Armor: 0

Range: –

Speed: Fast

Special: Cavalry charge bonus (+5 attack against infantry)

Train at: Stable

Cavalry is not an upgrade of the Scout. It is a separate unit with more hit points and attack strength (including +5 attack against infantry) than the Scout. Cavalry can be upgraded to Heavy Cavalry. Other cavalry units include the Chariot and War Elephant.

Researching Nobility increases hit points. Toolworking, Metalworking, and Metallurgy increase attack strength. Leather Armor, Scale Armor, and Chain Mail increase armor.

Horses were domesticated around 4000 BC for use as work animals. They first appeared in the Middle East around 2000 BC but were kept only as expensive pets. Gradually they were found useful in the civilized world as draft animals, but were rarely ridden. The concept of cavalry was introduced to the Assyrians from the plains of Russia during the dark age that followed the catastrophe of 1200 BC. The Assyrians added cavalry to their armies in order to fight the barbarians on the plains to their north. Israelite king Solomon was renowned for his large cavalry force. It eventually became clear that cavalry was more efficient than chariots. Two men, each on their own horse, were more useful than two men in a chariot that could be disabled with increasing ease. Cavalry was cheaper to maintain than chariotry and could enter more difficult terrain, but was no less fast and intimidating to infantry.

Heavy Cavalry

Age: Iron

Prerequisites: Build Town Center, build Barracks, build Stable, train Cavalry, upgrade to Heavy Cavalry.

Upgrade cost: 350 food, 125 gold

Cost: 70 food, 80 gold
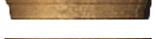
Hit points: 150

Attack: 10

Armor: 1

Piercing Armor: 1

Range: –

Speed: Fast

Special: Cavalry charge bonus (+5 attack against infantry); +1 piercing armor against Ballista, Helepolis, and missile weapons.

Upgrade of: Cavalry

Train at: Stable

Heavy Cavalry has more attack strength and armor (including +1 armor against missile weapons) than Cavalry. Heavy Cavalry can be upgraded to the Cataphract. Other cavalry units include the Chariot and War Elephant.

Researching Nobility increases hit points. Toolworking, Metalworking, and Metallurgy increase attack strength. Leather Armor, Scale Armor, and Chain Mail increase armor.

Heavy cavalry was distinguished from other cavalry by equipment and battlefield role. It was considered heavy because the warriors and horses usually wore some metal armor, including breastplates, helmets, and greaves. The horses were also oversized to more easily carry an armored man and to intimidate foes. While most cavalry acted as skirmishers and scouts on the battlefield, heavy cavalry was a shock weapon, held back for the proper moment to charge into enemy formations and ride them down. Heavy cavalry was rare in antiquity because the saddle and stirrup had not yet been invented. It took an exceptional rider to ride into a shock battle and use a lance effectively. The most famous heavy cavalry of the time was the Companion cavalry of Alexander the Great. These men were horsemen from birth on the plains of Thessaly and Macedon. Part of their devastating success in battle against the Persians may have been due to the novelty of their wedge-shaped charges, unprecedented at that time.

Cataphract

Age: Iron

Prerequisites: Build Town Center, build Barracks, build Stable, research Cavalry, upgrade to Heavy Cavalry, research Metallurgy, upgrade to Cataphract.

Upgrade cost: 2000 food, 850 gold

Cost: 70 food, 80 gold

Hit points: 180

Attack: 12

Armor: 3

Piercing Armor: 1

Range: –

Speed: Fast

Special: Cavalry charge bonus (+5 attack against infantry); +1 piercing armor against Ballista, Helepolis, and missile weapons.

Upgrade of: Heavy Cavalry

Train at: Stable

The Cataphract is the ultimate cavalry unit. The Cataphract has more hit points, attack strength and armor than Heavy Cavalry. You must research Metallurgy before you can upgrade to the Cataphract. Other cavalry units include the Chariot and War Elephant.

Researching Nobility increases hit points. Toolworking, Metalworking, and Metallurgy increase attack strength. Leather Armor, Scale Armor, and Chain Mail increase armor.

The cataphract was an improvement on ancient heavy cavalry represented by Alexander the Great's Companions. The Companions wore only helmets, greaves, and cuirass (breastplate). Cataphracts wore chain mail that covered more of the body and often armored their horses partially also. This gave greater protection against arrows and hand-to-hand weapons. Cataphracts were very expensive to equip, however, and appeared in the armies of only the most warlike and wealthy cultures.

VILLAGERS

MILITARY UNITS

BOATS

BUILDINGS

Chariot

Age: Bronze

Prerequisites: Build Town Center, build Barracks, build Stable, research Wheel.

Cost: 40 food, 60 wood

Hit points: 100

Attack: 7

Armor: 0

Range: −

Speed: Fast

Special: High resistance to conversion; double attack against Priest.

Train at: Stable

The Chariot is a fast, two-wheel cavalry unit pulled by horses. You must research the Wheel before you can build the Chariot.

Researching Nobility increases hit points. Toolworking, Metalworking, and Metallurgy increase attack strength. Leather Armor, Scale Armor, and Chain Mail increase armor.

Chariots originated in Sumeria before 2500 BC as four-wheeled carts pulled by onagers. These chariots were slow and cumbersome compared to later chariots, but provided a protected platform for spearmen and archers. How they were used in combat remains unclear, although all charging animals were intimidating on the battlefield. At this time the horse was not widely domesticated in the civilized parts of the world. In the first half of the second millennium BC, the chariot basket was reduced in size and mounted on only two wheels. Horses were substituted eventually to provide greater speed. The fast two-wheeled chariot was especially intimidating in battle because of its speed and the shock value of charging horses. At this time horses were rarely being ridden. Charioteers became the elite of the civilized armies for the next 600 or so years. Chariots were often manned by the nobility because of their elite status, the glory to be won, and the high cost of building and maintaining chariots and their horse teams.

War Elephant

Age: Iron

Prerequisites: Build Town Center, build Barracks, build Stable.

Cost: 170 food, 40 gold

Hit points: 600

Attack: 15

Armor: 0

Range: –

Speed: Slow

Special: Trample damage to all adjacent enemy units; attack strength cannot be upgraded.

Train at: Stable

The War Elephant is a cavalry unit with many hit points and specialattack. The War Elephant causes trample damage to all adjacent enemy units. The War Elephant's attack strength cannot be upgraded because it already causes so much damage to other units. For example, if ten men attack a War Elephant, all ten men receive 15 points of damage, so that the War Elephant causes 150 points of damage per round.

Researching Leather Armor, Scale Armor, and Chain Mail increases armor.

Elephants were tamed in antiquity but never domesticated. They were most useful as beasts of burden, but were employed in battle by several cultures, including the Phoenicians, Persians, and Indians. Elephants were much more intimidating than horses and much tougher as well. In addition, horses avoided elephants, making elephants, in theory, a great weapon against enemy cavalry. In practice, unfortunately, elephants rarely proved useful. They were difficult to acquire, train, and maintain. Hannibal attempted to take elephants across the Alps to attack Rome, but only one survived. No account of Alexander the Great's battles makes any mention of Persian elephants being effective. Elephants were difficult to control in battle and were likely to charge in any direction but the one desired, especially after being wounded. They were apparently more dangerous to friend than foe, being already nearer to friends and most likely to charge away from perceived danger through the friendly army arrayed around them.

Priest

Age: Bronze

Prerequisites: Build Town Center, build Granary, build Market, build Temple.

Cost: 125 gold

Hit points: 25

Attack: –

Armor: –

Range: 10

Speed: Slow

Train at: Temple

A Priest heals friendly and allied units and converts enemy units. If your diplomacy is set to Neutral or Enemy, your military units will attack Priests from other civilizations.

Researching Astrology allows faster conversions. Mysticism increases hit points. Polytheism increases speed. Fanaticism speeds Priest rejuvenation after conversion. Monotheism allows conversion of enemy Priests and buildings. Afterlife increases range.

The acceptance of gods and goddesses associated with complex religions required the provision of priests and priestesses who acted as representatives of the gods among the people. Priests developed and conducted rituals, interpreted the demands of gods, taught and enforced the religious laws, and sought new believers. Particularly effective priests, or those representing a potent religion, were thought capable of healing.

Villagers

Age: Stone

Prerequisites: Build Town Center.

Cost: 50 food

Hit points: 25

Attack: 3

Armor: —

Range: —

Speed: Medium

Create at: Town Center

Villagers can be assigned different tasks (builder, farmer, fisherman, forager, gold miner, hunter, repairman, stone miner). Hunters and villagers used in combat have increased attack strength.

Researching Stone Mining increases stone mining efficiency. Siegecraft increases stone mining efficiency and allows villagers to destroy walls and buildings. Gold Mining increases gold mining efficiency. The Wheel increases speed. Jihad increases combat strength.

Most people of ancient times lived out their lives working to make a living, primarily as hunters, gatherers, and fishermen originally, and later as farmers and herders. The agricultural revolution that began around 8000 BC freed more and more people from the daily pursuit of sustenance as food production became more dependable and efficient. New specialists included potters, metalworkers, builders, scribes, leather workers, woodworkers, traders, and professional soldiers. By the end of the ancient period, food production employed less than half the population within civilized cultures.

Technical support is not available in the trial version of Age of Empires.

TECHNICAL
SUPPORT

ACCESSIBILITY

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Accessibility

TECHNICAL
SUPPORT

ACCESSIBILITY

For information about setting the accessibility options, refer to the Windows 95 online Help.

Hand-to-hand units
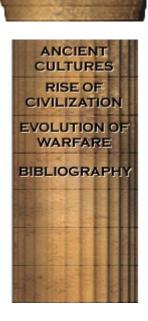
Hand-to-hand units include all Barracks units, Academy units, and Stable units (except the War Elephant).

Missile weapons

Missile weapons include all Archery Range units, towers, Scout Ship, War Galley, and Trireme.
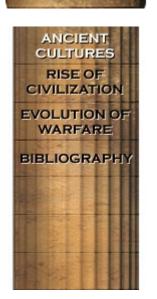
Siege weapons

Siege weapons/siege ships include Stone Thrower, Catapult, Heavy Catapult, Ballista, Helepolis, Catapult Trireme, and Juggernaught.

Ancient cultures

ANCIENT CULTURES
RISE OF CIVILIZATION
EVOLUTION OF WARFARE
BIBLIOGRAPHY
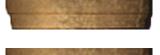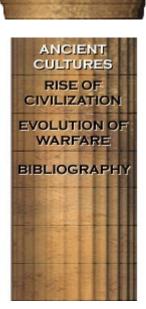
Assyrian
Babylonian
Choson
Egyptian
Greek
Hittite
Minoan
Persian
Phoenician
Shang
Sumerian
Yamato

Assyrian culture (1800 to 600 BC)

Lord Byron began his poem "The Destruction of Sennacherib" with "The Assyrian came down like the wolf on the fold." At the height of their power, the Assyrians were very much like a wolf among sheep, although their reputation is enhanced by several references to them in the Old Testament and by the extensive battle scenes that were found on their ruins. For a period they rose to the challenge of being surrounded by enemies and became the most powerful military force in the known world. Their legendary barbarity and fierceness was a deliberate policy intended to foster the submission of enemies and minimize the threat of revolt by vassals.

Location

Assyria was located in northern Mesopotamia (modern Iraq) along the Tigris River. It was settled after Sumer to the south but was dominated by the Sumerians both culturally and politically during its early history.

Capital

The capital of Assyria was Ashur for most of its existence, but moved to other sites when kings built new palaces. Other important cities and capitals in the Assyrian homeland were Nineveh, Arbela, Khorsabad, and Nimrud.

Rise to power

Around 2000 BC Assyria was invaded by Semitic barbarians called the Amorites. By 1800 BC an Amorite king of the Assyrians had established control over most of northern Mesopotamia. Their power was short-lived in this period, however, due first to the rise of Babylonia under Hammurabi and then the rise of the Mitanni in modern Syria.

The period 1363 to 1000 BC was the Middle Assyrian Empire. Several strong kings first reasserted Assyrian independence and then began encroaching on neighboring empires. The Assyrians avoided destruction during the catastrophe of 1200 BC, perhaps because they were already embracing the new military tactics and weapons that the older kingdoms were not. In the political vacuum of the ancient dark age, the Assyrians prospered. By 1076 BC Tiglathpileser I had reached the Mediterranean to the west.

The New Assyrian Empire, 1000 to 600 BC, was the peak of their conquests. Their empire stretched from the head of the Persian Gulf, around the Fertile Crescent through Damascus, Phoenicia, Palestine, and

into Egypt as far south as Thebes. Their northwestern border was the Taurus Mountains of modern Turkey. Other than the vestiges of what had once been the Minoan (Crete), Mycenean (Greece), and Hittite (Turkey) cultures, all areas of pre-catastrophe civilization in the West were ruled by Assyria.

Economy

The Assyrian economy was based on agriculture and herding, but the Assyrians also benefited by being situated astride some important trade routes. They are not remembered as traders in their own right, perhaps only as tax collectors on traders passing through. During the New Empire period, they profited from the taxes and tribute they collected from their various provinces and vassal states, including even Egypt for a few years.

Religion and culture

The Assyrian religion was heavily influenced by that of its Mesopotamian predecessors, mainly Sumeria. The chief god of the Assyrians was Ashur, from whom both their culture and capital take their names. Their temples were large ziggurats built of mud bricks, like their neighbors to the south.

The principal activity of the rich was hunting from chariots, appropriate for such a war-like culture. Despite their fearsome reputation, the Assyrians embraced civilization. They wrote using cuneiform and decorated their cities liberally with reliefs, painted stonework, and sculpture.

Government

The king was the head administrator of government, supported by local provincial governors. The palace was the site of government. Advisors consulted the omens before important decisions were made.

Provinces and vassal cities were required to pay taxes and tribute in the form of food, goods, gold, labor, military supplies, and soldiers for the army. An extensive network of roads and grain depots were built during the New Empire to speed communication and armies moving to trouble spots.

Architecture

The Assyrians built on a large and lavish scale, using mostly mud bricks, but also stone that was more readily available than it was farther south. Several New Empire kings built extensive palaces and decorated them with the booty of war and the tribute of vassal states. Palaces were also decorated with painted stone reliefs, extensive gardens, and man-made streams. A common decorative fixture was the *lamassu*—a winged hybrid creature, part bull and part man.

Military

The first Assyrian armies were peasant spearmen. Following a series of

military reforms around 800 BC, however, they employed a standing army of conscripts and professionals. This army was better armed, armored, and supplied than most of its enemies, giving it important advantages. The New Empire armies benefited from cheap iron used for improved swords and armor.

The Assyrians were among the first to adopt the concept of the integrated army made up of an infantry core for shock, supported by light missile troops and a mobile wing of chariots, camelry, and cavalry. The army was capable of fighting on the plains where chariots and then cavalry were critical, as well as in rough terrain where horses and chariots had little use. They campaigned regularly to the north and east against barbarians that posed a threat. The elite of the army for many years were the charioteers, followed by the cavalry when chariots became obsolete.

The Assyrians were accomplished at the art of capturing walled cities. Their historical records recount numerous city assaults and the brutality that followed. Cities that did not submit were often completely destroyed. Inhabitants were either killed or sent to another corner of the empire as slaves.

Decline and fall

The brutal policies of subjugation and exorbitant demands for tribute and taxes made the Assyrians unpopular masters. Despite the ferocity of their reprisals, vassal states continually revolted given an opportunity. Weaker kings were unable to hold the empire together in the face of internal and external pressure. In 612 BC the capital at Nineveh fell to a coalition of Babylonians and Medes. The Babylonians were in revolt (Babylon had been sacked in 648 BC) and the Medes (from modern western Iran) were seeking retribution for past Assyrian invasions of their lands.

The last Assyrian army was defeated soon thereafter by the same coalition, and the Assyrians as a separate culture disappeared from the world's stage.
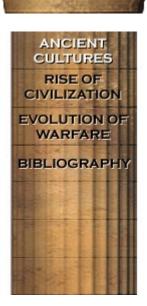
Legacy

The Assyrians are remembered from their boastful inscriptions and biblical references as ferocious warriors. Whether they were significantly more brutal than was normal for the time is unclear.

For several centuries, however, they were the greatest military power in the civilized world. Their armies were innovative and they appear to have been among the first to use large bodies of cavalry effectively. They certainly influenced the Persian armies that followed them.

They are not remembered for any significant advances in technology, philosophy, the arts, or science. Their cities have been piles of rubble for thousands of years now and have not given up fabulous treasures that can compare with those of Egypt and Greece.

Babylonian culture (1900 to 539 BC)

The Mesopotamian city-state of Babylon twice expanded to become an important world empire before being absorbed by Persia. Its two great expansions were sufficiently remarkable to earn it a place in history beside the two other great Mesopotamian cultures, the Sumerians and Assyrians. Between its Old and New Empire periods, Babylonia devolved back into a small but rich city-state that was captured occasionally by its neighbors.

The predominate inhabitants of Babylon changed several times over its existence, although the culture remained relatively constant and distinct. The Amorites, the Kassites, and the Chaldeans were all Babylonians at least once.

Location

The Babylonians took their name from their capital and only major city, Babylon, located on the Euphrates River west of Sumeria and south of Assyria. It was well-placed on the river for agriculture and for trade, but had no natural defenses. A strong leader and strong army were needed to defend it. Determined attackers were able to sack the city on numerous occasions during its history when such a leader or army was not available.

Rise to power

Babylonia was founded as a kingdom around 1900 BC by Semitic Amorite barbarians who overran much of Canaan, Akkad, and Sumer one hundred years earlier. In 1792 BC the small kingdom was inherited by Hammurabi who ruled until 1750. During those 42 years, Hammurabi extended the kingdom to encompass all of Sumer to the east and Akkad to the north. He also defeated the barbarian Gutians in the Zagros Mountains to the northeast who had previously sacked Akkad. He also pushed back the Elamites (east of Sumer) and the Assyrians (north of Akkad). This was the first great Babylonian empire.

Following Hammurabi's death, the empire fell into gradual decline. In 1595 BC Hittites drove down the Euphrates and sacked Babylon, plundering the city and deposing the Amorite kings. This ended the first empire. Within 20 years, new invaders called the Kassites had settled around Babylon, establishing a new dynasty. The Kassites were neither Semitic nor Indo-European, and probably came from east of the Zagros Mountains.

The Kassites ruled Babylon for several centuries before being conquered by the Assyrians in 1158 BC. Descendants of the Amorites had restored

control by 1027 BC.

During the Eighth and Seventh Centuries, the Chaldeans, new Semitic immigrants to the area, and the Assyrians fought for control of Babylon. The Assyrians claimed sovereignty for a while but sacked the city once as punishment for rebellion.

A Chaldean sheik seized the Babylonian throne and then destroyed the Assyrians with the help of the Medes. The Chaldean Dynasty and the New Empire lasted from 626 to 539 BC. The revived Babylonians overran most of the Assyrian Empire from the Persian Gulf to the borders of Egypt.

In 597 BC Nebuchadrezzar II captured Jerusalem and forced its king and nobles into exile. When the puppet ruler of Jerusalem rebelled, the city was taken again in 586 BC after an eighteen-month siege. This time much of the population was deported to Babylon and their descendants remained there until released by the Persians. This period of Hebrew history was called the Babylonian Captivity.

Economy

The basic economy of Babylonia was typical for Mesopotamia at the time. Irrigation and dikes controlled the waters of the Euphrates River, providing bountiful harvests of grain, vegetables, and fruit in normal years. These foods were supplemented by herds of sheep and some cattle.

The Babylonians traded food surpluses for raw materials like copper, gold, and wood, which they used to manufacture weapons, household objects, jewelry, and other items that could be traded.

The fabulous wealth of the New Empire (626 to 539 BC) derived from controlling the east-west and north-south trade, primarily thanks to control of Phoenicia, Syria, and the other Levant ports. This area had been the nexus of civilized trade for over a thousand years, and, for that reason, the prize for every empire and pseudo-empire of the age. Not long after the end of the Babylonian New Empire, the shift of much trade to the central and western Mediterranean reduced the importance of this area.

Religion and culture

The Babylonians worshipped many gods, but chief of these was Marduk, god of the city of Babylon. Marduk was represented by a dragon in the artwork that decorated the city. Festivals were held throughout the year in honor of specific gods to assure their favor. The New Year festival for Marduk assured fertility in the fields.

For a brief time the New Empire was among the richest in the world. The city reflected that wealth in its extensive and highly decorated monuments. The interior of the Temple of Marduk was reportedly covered with gold.

At the center of a great and rich trading empire, the people of Babylon had access to exotic goods and manufactured items from throughout the world.

Government

The New Empire government of Babylon adopted many of the Assyrian imperial practices, which probably contributed to its own short life. The king had overall administrative power, in addition to his central role in important religious rituals. Governors ruled important provinces on behalf of the king, but most of these were Babylonians appointed from outside the local area. Local puppets were often left in place to rule local kingdoms, but this occasionally led to revolt, as in the case of Jerusalem.

Architecture

The city of Babylon was destroyed and rebuilt several times, usually on top of the old ruins. Buildings and walls were constructed of mud bricks, first sun-baked, and then baked with fire.

The Babylon of the New Empire period was one of the wealthiest cities in the world. The Chaldean kings rebuilt the city and established its reputation for splendor for all time. The Euphrates River passed through the middle of the city and was also directed around its four sides through a moat. Inside the moat were double walls. The Greek historian Herodotus claimed that the outer wall was so wide that a chariot with four horses could drive along it. There were several city gates, each named after an important god. The Ishtar gate opened on the sacred Processional Way that led to the ziggurat and Temple of Marduk. The gate, sacred way, and temples were decorated with bright blue glazed tiles depicting real and fantasy animals in relief.

The two sides of the city were connected by a bridge. The east side contained the palace and temples, including many ziggurats. The greatest of these, built by Nebuchanezzar II, had seven levels with a small temple to Marduk at the top. This ziggurat was probably the Tower of Babel mentioned in the Bible. Nebuchanezzar also built the Hanging Gardens of Babylon, a multistoried ziggurat decorated with trees and plants to resemble a mountain. According to legend, the gardens were built to remind one of his wives of her mountain homeland. The Hanging Gardens were one of the seven wonders of the ancient world.

Military

Little is known of the Babylonian military from either the Old or New Empires, although Hammurabi's army of the Old Empire may have made important use of chariots when these were first coming into use.

The New Empire armies probably copied much from the Assyrians. This would suggest that Babylonians made extensive use of cavalry, especially mounted bowmen. Foot troops probably used iron weapons and wore iron helmets and some chain mail armor. The Babylonians and their less advanced allies, the Medes, took three heavily fortified Assyrian cities in short succession, suggesting they had mastered the Assyrian techniques for storming cities.

Decline and fall

Following seven turbulent years that saw three new kings in succession

and two rebellions, in 556 BC the last of the Chaldean Dynasty, Nabonidus, took the throne of Babylon. He worshipped the moon god, Sin, but neglected local affairs and important religious rituals associated with other gods. For several years he did not perform the important New Year festival in the name of Marduk, the deity of Babylon, that renewed the fertility of the land. He also introduced reforms that gave effective control of temple finances to himself.

The unrest and dissatisfaction these events fostered came at a time when a new power to the east, Persia, had been gradually expanding and spreading its influence. Under Cyrus I, the Persians had first overthrown their masters, the Medes, and then expanded to the northwest into Anatolia. During these conquests, Cyrus demonstrated a high degree of tolerance and clemency that encouraged others not to resist.
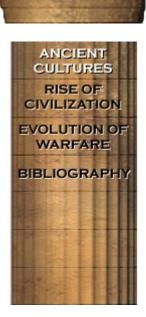
When Cyrus turned against the Babylonians, he was welcomed by a large segment of the population, including the influential priests. Cyrus first defeated Nabonidus in battle at Opis. Nabonidus fled to Babylon but the city surrendered without a fight on October 12, 539 BC, and the last Babylonian king went into captivity. The Jews and other peoples held in Babylonian captivity were freed. The entire New Empire of Babylon became part of the Persian Empire and Babylonia ceased to exist as a separate entity and culture.

Legacy

The first Babylonian empire is best known for the Law Code of King Hammurabi, circa 1750 BC, purportedly handed down by the god Shamah. The laws of Moses derive from Hammurabi's code. The laws themselves are preserved on a 90-inch stone stele that was uncovered in Susa in modern times. It had been carted off by the Elamites following their sack of Babylon in 1158 BC.

The New Empire of Babylon was noted especially for its wealth and grandeur. This was reported in Old Testament accounts from the period of the Hebrew Babylonian Captivity and by the Greek historian Herodotus who visited the city. The most impressive features of the city were its walls, the Ishtar Gate, the ziggurat and temple to Marduk, the Processional Way, and the Hanging Gardens.

Choson culture (450 BC to 108 BC)

The Korean peninsula was invaded by successive waves of Neolithic peoples, but the culture of the area remained little-changed for a long period until the use of bronze implements began around the ninth or eighth centuries BC. The Bronze Age brought significant change to Korea. Recovered bronze spear points and arrowheads indicate conquest and warfare were widespread. Towns protected by earthen walls appeared. Funerary dolmens (rock shelters covered by enormous cap stones) indicate the rise of a stratified political and social structure.

The Bronze Age in Korea lasted until the fourth century BC. Sometime around 450 BC, the first large political groupings of walled-town states arose. The most advanced of these was Old Choson.

Location

The state of Old Choson was located in the valleys of the Liao and Taedong Rivers, in the southwestern part of what is now North Korea. It occupied the Taedong River basin originally and spread its influence gradually over a large region of the peninsula.

Capital

The Choson capital was Wanggom-song, now modern P'yongyang (the capital of North Korea).

Rise to power

The power of Old Choson grew from around 450 BC to the end of the fourth century. The Choson expanded possibly due to better agriculture and population growth, better use of newly available iron weapons, better leaders, or all of the above. When the Chinese kingdom of Yen encountered the Old Choson culture, they referred to them as being arrogant and cruel, which suggests that the Old Choson were formidable warriors.

Despite the apparent strength of Old Choson at the end of the fourth century, they went into decline following the arrival of the Yen kingdom across the Liao River. The Chinese overlord in control of the Liaotung Peninsula changed several times during the next century and the political upheaval fostered an immigration of Chinese political, military, and economic power into Old Choson. One refugee, named Wiman, built a power base among the other refugees and eventually drove the Old Choson king from his throne around 190 BC.

The new kingdom, called Wiman Choson, was a hybrid of Korean and Chinese influences. Due to its superior military and economic strength, it subjugated smaller Korean states to its north, east, and south. This placed the Wiman Choson between the now dominant Han Chinese and the remaining Korean states in the south, allowing it to control trade between the two regions. For three generations, the Wiman Choson dominated north central Korea.

Economy

The principal economic activity of Bronze and early Iron Age Korea was agriculture. Rice was the main food crop of southern Korea. Raising livestock (oxen, horses, pigs, and dogs) was more important in the north. The basic farming unit was the village, made up of headmen, free peasants, and a few slaves. Peasants and slaves worked mainly on communal farms. There were some peasant-owned lands as well. The free peasants were heavily taxed and provided labor to the state. They were not permitted to bear arms or serve in the armies. The Chinese of the time considered Korean peasants to be agricultural slaves.

Religion and culture

The leaders of the early walled towns in Korea performed both political and religious functions. The dignity and authority of these leaders was enhanced by their acknowledged descent from a sun god. Political and religious power split gradually into two separate functions as the confederation grew in size. Rituals were thereafter directed by specialists.

The primitive religion of prehistoric Korea was based on animism and shamanism. Priests were magicians who attempted to move the gods by evocation. By the time of Old Choson, priests prayed to the gods humbly and earnestly for favor.

The ancient Koreans believed in the immortality of the soul and buried their elite with elaborate ritual. They also practiced divination. The two most important festivals of the year were tied to the growing season. In the spring they prayed for abundance and in the fall they celebrated thanksgiving.

Government

Village communities were governed by a ruling elite that kept order, allocated land and resources, collected taxes, and provided security. The individual communities were held together in confederation by military and economic means. Old Choson took the name wang (king) for its leader about the time that the nearby Chinese kingdom of Ye employed the same title.

Military

Little is known about the armies of Choson except that they were standing armies and not levies of peasants. Evidence of horses and chariots is not widespread, suggesting that only the richest warriors could afford these enhancements. Bronze spear points and arrowheads

from the early days of the Choson suggest an army of spearmen and archers. Later finds include bronze daggers and spears of distinctive styles, iron daggers, and iron spear points. The daggers suggest that these short weapons were used by infantry for close combat in addition to spears.

The prowess of Choson armies can be inferred from their expansion and dominance of the region and the comments about Choson recorded by their Chinese neighbors.
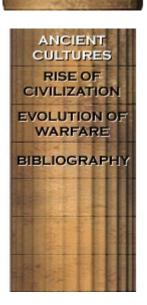
Decline and fall

Unified China under the Han Dynasty was not pleased by Wiman Choson's growth and control of eastward trade, and was concerned about the possibility of an alliance between Wiman Choson and the Hsiung-nu (barbarians then expanding out of Mongolia into Manchuria). The aggressive Emperor Wu of Han launched an attack against the Wiman Choson when diplomacy failed to bring them to heel. The Wiman Choson were a tough adversary but were weakened by defections and collaborationists among the nobility. The Wiman Choson capital fell in 108 BC and the kingdom came to an end.

Legacy

Choson, the most ancient kingdom of Korea, was recalled in 1390 AD with the founding of the Choson dynasty that was to rule the peninsula until its annexation by Japan in 1910. The name Choson was taken to honor the greatest of the ancient Korean kingdoms. The legacy of the Choson was a Korean culture that remained separate from that of China, despite the proximity and influence of that enormous neighbor.

Egyptian culture (5000 to 30 BC)

The Egyptian culture was one of the oldest and most long-lived of antiquity. It benefited from an abundance of good farmland, nearby mineral resources, and a good strategic position. Despite occasional invasion and internal strife, it endured as a distinctive culture for nearly 5000 years.

Location

Ancient Egypt occupied almost the same area as modern Egypt does today. Its civilization stayed very close to the Nile River. Because it was almost entirely surrounded by desert, enemies could approach only from the west and northeast along the Mediterranean coast, from the south down the river valley, or directly over the sea.

Capital

During its long history, the capital of Egypt was located at various times in Hierakonpolis, Memphis, Herakleopolis, Thebes, It-towy, Akhetaten, Tanis, Sais, and Alexandria. The most important of these were Memphis and Thebes. Alexandria was founded as the capital by Alexander the Great in 331 BC. Greek overlords, the Ptolemaic dynasty, ruled from here until 30 BC.
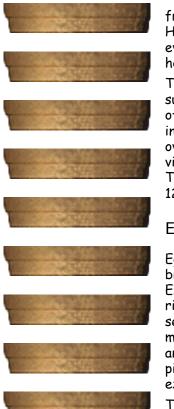
Rise to power

Agriculture was brought to the Nile Valley prior to 5000 BC by immigrants from the highlands of Palestine. By 3000 BC, agriculture had spread southward up the Nile. Flooding was under control and irrigation put much more land under cultivation. The abundance of food led to large populations and increased wealth for the area.

The early history of Egypt was a period of consolidation. Two separate kingdoms rose and vied for power along the river. Around 3100 BC, King Menes of Upper Egypt conquered Lower Egypt (centered on the lowland river delta) and established the First Dynasty.

Between 3100 BC and 1300 BC, the Egyptians struggled with Nubians and Kushites up the Nile to the south. Forts and garrisons held the frontier but during periods of weakness these were destroyed. Around 1300 BC the Nubians suffered an important defeat and were neutralized as a threat for about 500 years.

Egypt's Dynasty XIII, 1783 to 1640 BC, was very weak. During this period the frontier forts to the south were lost and Semitic immigrants

from the east moved into the delta. These immigrants, called the Hyksos, took control of the entire delta region in 1674 BC. The Hyksos eventually adopted Egyptian culture and language, and introduced the horse and chariot.

The New Kingdom was founded by Dynasty XVIII in 1552 BC, following a successful war to drive out the Hyksos. This dynasty was the great age of the warrior pharaohs and Egyptian empire. To prevent further incursions from the east, the Egyptians attempted to establish control over the kingdoms in the Levant and Palestine. During this period they vied for control with the Hittites and Mitanni, as well as the local kings. The Egyptians were the dominant power in the Near East until around 1200 BC when the entire area was overrun by barbarians.

Economy

Egypt was an agricultural society dependent on the water and soil brought down each year by the Nile from the highlands of Ethiopia. Extensive irrigation made it possible to farm fields not adjacent to the river but still close enough to be inundated each year and receive new sediments. The principal crops were wheat and barley that were used to make bread and beer, the staples of their diet. They also grew fruits and vegetables and raised cattle, pigs, sheep, goats, geese, ducks, and pigeons. The abundance of food meant a large population and allowed the export of food.

The Nile passes through several hilly regions and some of these were rich in minerals. The nearby Sinai Peninsula also held mineral riches. Unlike some other ancient cultures, the Egyptians had relatively easy access to copper and gold, further increasing their wealth. The hills were sources of granite, limestone, and sandstone that they used for construction.

The Egyptians were one of the first cultures to build boats and they eventually took these out into the Mediterranean. Egypt became an important Mediterranean port of call as trade increased because it was a rich market for both buying and selling. Principal Egyptian exports were grain, food, linen, perfume, and manufactured goods. Important imports were timber, slaves, silver, horses, pottery, and wine.

Religion and culture

The Egyptian religion had over 2000 gods, though only a few of these were predominant. The important gods had a home town where their principal temple was located. One of the most important was Ra, the sun god, understandably critical to an agricultural society.

They believed in a life after death. They referred to this as the "next world," and thought it was somewhere to the west. They developed elaborate burials and embalming to preserve the body for this second life. Goods and servants were buried with royalty and nobles to serve them.

Government

The ancient Egyptians believed their kings were descended from the sun god Ra. They believed they could communicate with the gods through the

king.

The king had absolute power but was required to perform several important duties. He was responsible for the harvest and irrigation of crops. He directed the government, trade, and foreign policy. He enforced the laws and led the army. During the New Kingdom, the pharaohs usually commanded their armies in the field.

Reporting directly to the pharaoh were two viziers, one for Lower Egypt based in Memphis and one for Upper Egypt based in Thebes. Below the viziers were rural districts controlled by governors and towns controlled by mayors. These officials carried out the pharaoh's orders and collected taxes. Scribes kept the records.

The Egyptians had no coinage until they were conquered by Alexander the Great. All workers paid taxes by turning over a percentage of their production, whether it was fish, grain, trade goods, pottery, or other goods. In addition, each household had to provide a laborer for several weeks each year for mining or public works. The pyramids were probably built by laborers putting in their annual service.

Military

The Egyptians were among the first cultures to possess the necessary population and wealth to build standing armies of professional soldiers. Prior to the Hyksos invasion around 1675 BC, Egyptian soldiers were equipped with simple bows, maces, and spears. The Hyksos introduced the horse and chariot, which were quickly adopted by the Egyptians in turn. The dominance of the Near East by New Kingdom Egypt, from 1600 to 1200 BC, was primarily due to the large and powerful chariot armies sent into battle there. These chariots carried a driver and composite bow archer and were the elite of the army.

Decline and fall

Egypt survived the catastrophe of 1200 BC by fighting off several major attempted invasions. They went into decline, nevertheless, following the death of Rameses III who was the last of the great warrior pharaohs. Their decline was partly due to trade coming to a virtual halt for several generations. A series of weak kings and civil wars over succession to the throne also eroded their strength.
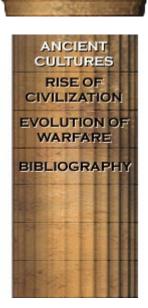
In 728 BC Egypt was conquered by Nubia and held for 60 years. In 665 BC the Assyrians completed a conquest of Egypt by sacking Thebes. A new native Egyptian dynasty arose in 664 BC, eventually throwing out the Nubians and asserting their independence from Assyria by stopping payment of tribute. In 525 BC Egypt was conquered again from the east, this time by Cambryses II of Persia. When the Persians faltered in their war with the Greeks, the Egyptians reclaimed their independence briefly before succumbing once more to Persian invasion by 332 BC. Within a year, however, the Persians themselves were gone, destroyed by Alexander the Great who was accepted by the Egyptians as their pharaoh.

Greeks ruled Egypt as overlords from the time of Alexander the Great until 30 BC when Cleopatra VII, the last of the Ptolemaic dynasty, and Mark Antony were defeated by Octavian. Egypt thereafter became part

of the Roman Empire.

Legacy

The ancient Egyptians are remembered for the quality and quantity of cultural objects that have survived to the present, including the Pyramids, the Sphinx, the treasures of Tutankhamen's tomb, the other monuments and temples of the Nile Valley, hieroglyphics, mummies, and papyrus. They are also remembered in the West because of their prominent role in the history of ancient Israel as recounted in the Old Testament.
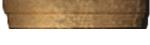
Greek culture (2100 to 146 BC)

The ancient culture with the broadest and most long-lasting impact on the future of Western civilization was that of Greece. The Greeks dominated the known world militarily for only a brief period, but their cultural influence spread farther and lasted much longer. Rediscovered in the West in large part after the Medieval Dark Age, it was an important foundation for the growth of modern western civilization.

The Greeks never formed a unified kingdom, but existed as city-states, sometimes working together and sometimes at war with each other. At the zenith of Greek military power under Alexander the Great, they were a collection of city-states in cooperation.

Location

Greek culture was centered on the mainland of modern Greece but spread to the islands of the Aegean, into the lower Balkans, across the Aegean to the western coast of Anatolia, to Sicily, to parts of North Africa, and to southern France (Marseilles was founded as a Greek colony). The campaigns of Alexander greatly expanded the culture, establishing it in central Anatolia, the Levant, Egypt, Syria, Mesopotamia, and Persia to the borders of India. In the early second century BC, it was possible to travel from the south of modern France to India using only Greek to communicate.

Capital

As a collection of city-states, there was usually no capital of the Greek culture. During the Bronze Age, Mycenea was one of the strongest and richest citadels. During the Archaic and Classical periods, Athens (the cultural center) and Sparta (the strongest military power) vied for prominence. During the brief Greek apogee under Philip and Alexander, the de facto capital was the Macedonian city of Pydna. Following the death of Alexander, his empire was eventually divided into three parts. The Antigonid Dynasty ruled Greece and Macedonia from Pydna. The Selucids ruled Mesopotamia, Anatolia, Syria, the Levant, and Persia from a newly built city, Selucia, on the Tigris River. The Ptolemies ruled Egypt from another newly built city, Alexandria.

Rise to power

The history of ancient Greek culture is divided into several periods—the Bronze Age (2100 to 1200 BC), the Dark Age (1200 to 800 BC), the Archaic Period (800 to 500 BC), the Classical Age (500 to 336 BC), and

the Hellenistic Period (336 to 30 BC).

The Bronze Age saw the rise of the first cities on the mainland. These were predominantly fortified palaces on hilltops. This culture was named after its greatest citadel, Mycenea. Excavation of Mycenea by Heinrich Schlieman in the 1870's revealed fabulous burial tomb treasures. The Mycenean culture disappeared around 1200 BC following attacks by barbarians. The city of Troy was also sacked around this time.

The catastrophe of 1200 BC (described earlier) devastated the economy of Greece and ushered in a Dark Age that lasted about 400 years. Gradually civilization reappeared at old sites, such as Athens, and at new sites such as Sparta and Corinth.

By 800 BC the city-states of the mainland were economic and military powers. During the next 300 years, the Archaic Period, the Greeks expanded by establishing colonies across the Aegean in Anatolia (Ionia) and along the central and western Mediterranean coasts. They vied with the Phoenicians for colony sites and trade. The Archaic Period came to an end when the rising eastern power of Persia came into conflict with the Greeks over the Anatolian coast.

The period of 500 to 336 BC was the Classical Age of Greece, dominated first by the wars with Persia and then the Peloponnesian civil war between Athens and Sparta. Although this period is defined by military events, it was also a time of many important cultural advances.

The Hellenistic Period takes its name from the Greek word *Hellene*, which means Greek. This period began with the installation of Alexander as king of Macedon following the assassination of his father. In 13 years of military campaigns, Alexander conquered most of the known world and spread the Greek culture behind his armies. After Alexander's premature death in 323 BC, his empire was eventually divided into three parts. Although these parts fought each other and gradually shrank due to rebellion and attack, the culture of the civilized world remained primarily Greek.

Economy

Grains and bread were staples of the Greek diet but they could be grown only in a few fertile areas. Most of Greece was hilly and not suitable for large farms on the scale of Egypt or Mesopotamia. Farmers grew fruits and vegetables where they could clear fields. On the hillsides they grew olives for food and oil. Further up the hills they grew grapes for wine.

Horses were raised mainly in Thessaly and Macedonia where there were open grasslands. Elsewhere they were kept only by the rich. Cattle were kept mainly for milk, pigs and poultry for meat, and sheep for leather and meat. Seafood supplemented diets in coastal areas.

The Greeks were renowned for pottery that was both functional and beautiful. Decorations on pottery revealed much about the ancient Greek culture to historians. By carefully studying the changing styles of pottery, historians were able to date it and then use shards to help date excavations and other objects found with it.

The Greeks took advantage of their geographic position between the Aegean and Mediterranean Seas to engage in trade. City-states traded among themselves and overseas. Thessaly and Macedonia exported horses, for example, while Athens exported honey and silver. Important

Greek exports were oil, wine, pottery, sculpture, metalwork, cloth, and books. Their most important import was grain from the Black Sea region, Egypt, Italy, Sicily, and Cyprus. Other important imports were timber, wool, linen, copper, dyes, silk, spices, and ivory.

Coins were first used in Lydia, a small kingdom in northwestern Anatolia, at the end of the seventh century BC. The concept quickly spread to the Ionian Greek colonies and then throughout the Greek culture. The most popular coins were made of silver. City-states celebrated their independence by minting their own coins showing a representative symbol (the owl for Athens and the Pegasus for Corinth, for example).

Religion and culture

The Greeks believed in many gods who were responsible for the living and the dead. Their gods were very human-like—they got married, had children, felt love and jealousy, and sought revenge. Legends of the gods taught what pleased and what angered them. The principal gods were the twelve Olympians thought to live on Mount Olympus. They were led by Zeus, ruler of the heavens. Temples were built to provide earthly homes for individual gods. The Parthenon in Athens, for example, was dedicated to the goddess Athene. Inside was a statue of Athene made of gold and ivory that stood over forty feet high. Offerings of jewelry, pottery, and sculpture were given to the temple. Animals and birds were given to the priests for sacrifice. Festivals were held to please individual gods and persuade them to be munificent.

Before an important project was started, an oracle or soothsayer was consulted to learn the will of the gods. The most famous of these was the Oracle of Delphi, where a priestess called the Pythia would voice the will of Apollo. Priests would interpret the Pythia's often vague replies. In one famous example, Croesus, the king of Lydia, asked whether he should invade Persia or not. He was told such an invasion would destroy a great kingdom. He assumed the Persians were the kingdom in question, but in fact Lydia was conquered by Persia.

Women in Greece led generally sheltered lives and had little active role in society. They took their social status from their husbands. The emphasis was on having sons and raising them to be citizens and soldiers. Boys were given an extensive education in reading, writing, arithmetic, music, poetry, dancing, and athletics. Both mental and physical development was stressed.

Music, poetry, and theater were an important part of the Greek culture. All Greek cities and colonies built a theater or amphitheater.

Society consisted of two main groups—free people and slaves. Slaves were owned by free people and were employed as servants and laborers. Slaves were purchased in international slave markets or were prisoners of war. Free men in Athens were either citizens, born to Athenian parents, or *metics*, born outside of Athens. Both groups were required to serve in the army, but only citizens could become government officials or jurors.

Government

An independent city-state was called a *polis*. Each consisted of the city

and surrounding countryside. The largest of these was Athens, with about one thousand square miles of territory.

During the Archaic Period, most city-states were governed by a group of rich landowners. These were the *aristoi*, meaning best people, or the aristocrats. Resentment of aristocratic rule led to riots when traders and craftsmen began to prosper but had no say in government. Beginning around 650 BC, individuals called tyrants were allowed to rule to keep the peace. Government was improved under an enlightened tyrant but the system was susceptible to corruption. In 508 BC Athens introduced a new system called democracy, in which all citizens took part in their government. Women, foreigners, and slaves had no say.

Architecture

Greek homes were simple structures of mud and brick but their public buildings, especially temples, were beautiful structures of stone. A distinctive feature of Greek architecture was the use of columns supporting horizontal lintels.

Military

During the Bronze Age, the armies of the individual palaces were mainly chariots manned by the richest citizens. These armies were destroyed by barbarians around 1200 BC, sending Greece into its Dark Age.

During the Archaic Age, the aristocrats at first dominated the army as cavalry because they alone could afford horses. Foot soldiers came from the poorer classes that could not afford horses or better weapons and armor.

Eventually trade and wealth increased, while the cost fell for new weapons made of iron. The cavalry was replaced in importance by a new army of well-equipped foot soldiers called *hoplites*.

Each city had a different system for raising its army. In Athens, all free men aged 20 to 50 could be called upon in time of war. Each of the ten Athenian tribes had to provide enough troops for one regiment and one commander, called a *strategoi*.

Hoplites carried on their left arm a large round shield that extended from neck to thigh. The shield was decorated with a symbol from their family, tribe, or city. They wore bronze helmets with a horsehair crest on top to make the soldier look taller and more powerful. For body protection they wore a cuirass of bronze, or leather and bronze, from shoulder to chest, plus bronze greaves on the front of the lower legs. Their weapons were a long spear and a short iron sword.

Hoplites fought in the phalanx, a square of men usually eight ranks deep. It was important that the phalanx move and fight together. Flutes and other musical instruments helped them keep in step. The terrifying hand-to-hand clash of opposing phalanxes called for extreme courage and discipline.

The Greeks disdained the use of cavalry and skirmish troops using bows, slings, or javelins. As long as they fought among themselves or were lucky, this was not a problem. Extensive contact with other military systems during the Persian Wars eventually convinced them that the phalanx needed to be supported. The ultimate Greek army employed

heavy and light cavalry, light infantry, and skirmishers in support of its heavy hoplite infantry.

Decline and fall

Following the death of Alexander the Great, the city-states of mainland Greece attempted to rebel against Macedonian rule but were defeated in the Lamian War of 323-322 BC. During the next 40 years, the War of the Diadochi contested the division of Alexander's empire. It was eventually divided into three kingdoms (Greece, Egypt, and Persia). These three kingdoms made up the Hellenistic world.

The Antigonid Dynasty ruled Greece and Macedon but lost control of their colonies in southern Italy to the Romans in 275 BC. The Greeks supported the Carthaginians against Rome during the Punic Wars and paid for that once the Carthaginians were destroyed. Three Macedonian Wars against Rome resulted in the end of the Antigonid Dynasty in 168 BC. Following an unsuccessful Macedonian revolt, the city-states of Greece became provinces of the Roman Empire in 146 BC.

The Selucid Dynasty attempted to rule what had been the enormous Persian Empire. This proved impossible and parts began rebelling very quickly. By 180 BC their kingdom had been halved. In 64 BC the Roman general Pompey seized the Selucid kingdom and incorporated it into the Roman Empire.
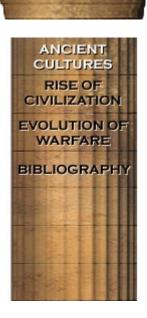
The Ptolemaic Dynasty consisted only of Egypt. Because of its relative seclusion and wealth, it lasted the longest of the three Hellenistic kingdoms. Queen Cleopatra VII and her husband Marc Antony of Rome were defeated in battle by Octavian at Actium in 31 BC. The last Ptolemy committed suicide and Egypt became part of the Roman Empire in 30 BC.

Legacy

The Greek language and culture spread behind Alexander the Great's armies. The Romans in turn adopted much of the Greek culture, preserving it and spreading it to new parts of the world. After the fall of Rome, Greek culture was preserved and expanded upon within the Byzantine Empire and in the Arab world, and passed on to the West following the Renaissance.

The legacy of ancient Greece has had an impact on many disciplines, including medicine (the scientific approach to medicine; the Hippocratic Oath taken by doctors), mathematics (Euclidean geometry; the Pythagorean theorem), literature (the *Iliad* and the *Odyssey*), theater, poetry, sculpture, language (the Bible's New Testament was written in Greek; thousands of words passed on to modern languages), architecture (the White House; the British Museum), history (Herodutus is regarded as the father of history), politics (democracy), philosophy (all philosophical studies since Plato have been referred to by one writer as mere footnotes to his work), science (the scientific method; laws of nature; the classification of plants and animals; the heliocentric theory), athletics (the Olympic Games), and trade (Greeks established trade routes to India and the Silk Road to Asia).

Hittite culture (2000 to 1200 BC)

The extent of the Hittite civilization and empire was rediscovered only within the last hundred years. The Hittites had been mentioned several times in the Old Testament, but were considered only bit players. Excavations of sites in Turkey and Syria, plus the decipherment of inscriptions and recovered clay tablets, revealed that the Hittites were a world power at one time, rivals of the Egyptians and conquerors of Babylon.

Location

The Hittite empire was centered in Asia Minor (modern Turkey). At its maximum, it extended from the Aegean coast of Anatolia, east to the Euphrates River, southeastward into Syria as far as Damascus, and south along the eastern Mediterranean coast of the Levant. Hittite King Mursuli sacked Babylon around 1600 BC, but did not attempt to hold the region.

Historians do not know where the Hittites originated or how they got to Asia Minor. Studies of their language indicate that they were probably of European origin and migrated south through the Balkans or past the eastern end of the Black Sea sometime around 2000 BC.

Capital

The greatest Hittite capital was at Hattusas, outside the modern Turkish town of Bogazköy in north central Turkey, inland from the Black Sea. This city had previously been the capital of the Hatti, a local kingdom that was conquered by the Hittites around 1900 BC. The name Hittite derives from the name of the Hatti. The capital was moved to Hattusas around 1500 BC and the city was noted for its massive walls and placement in rugged terrain.

Rise to power

Around 2000 BC when the Hittites entered Asia Minor, the region was populated by small yet sophisticated, kingdoms each no larger than a thousand people. The Hittites began expanding their kingdom around 1900 BC, using both force and diplomacy to bring rival city-states and kingdoms in Asia Minor under control. The Hittite kingdom went through several periods of expansion and contraction until around 1400 BC.

Beginning then, several strong kings in succession expanded the Hittite empire across all of Asia Minor, into Syria, and beyond the Euphrates River. The push into Syria brought the Hittites into conflict with the

Egyptians who also sought to dominate this area.

For several generations the Hittites and Egyptians remained diplomatic and military rivals. The great battle of Kadesh was fought between these superpowers around 1300 BC and was commemorated in Egypt by a great pictorial relief, an epic poem, and an official written record. After several decades of uneasy stalemate, the two powers signed a peace treaty and mutual defense pact, perhaps in response to growing Assyrian power to the east. A copy of the treaty was inscribed on the walls of an Egyptian temple at Karnak where it can be read today. Duplicate copies of this treaty on clay and silver tablets were also found by archaeologists in both countries.

Economy

The Hittite imperial boundaries encompassed a diverse geography, including expansive grassy plains, mountains, sea coast, river valleys, and desert. Their economy was based mainly on grain and sheep raising, but they also possessed large deposits of silver, copper, and lead ore. They were adept metalworkers and among the earliest makers of iron, although during their time iron was more valuable than gold and not available in any quantity.

They were an important provider of copper and bronze to Mesopotamia. When they attempted to control the trade to and from that area by extending their influence into Syria, the Levant, and upper Euphrates River region, they came into conflict with the Egyptians.

Religion and culture

The Great Temple at Hattusas, below the hill on which the palace stood, was the religious center of the empire. The Hittite king was also the high priest of the kingdom and split his time between government, religious duties, and conquest. The king's dual role was useful in unifying the culture of the kingdom among its diverse peoples. Each year the king/high priest traveled extensively to preside at festivals. These personal appearances brought in rich donations and helped stabilize the realm.

Hittite religion was polytheistic. It was tolerant of other beliefs and flexible about incorporating new gods already worshipped by newly conquered peoples. Their supreme deity, Teshub, the Storm God, was borrowed.

Hittite culture discovered so far pales in comparison to that of their contemporaries in Bablyon and Egypt. We have only a few bronze and stone statuettes, seal impressions, and rock carvings to judge their artistic ability. One enduring symbol from their artwork is the double-headed eagle that was adopted as a national symbol by both Austria and Russia.

They used cuneiform for writing as well as their own hieroglyphics. They patterned their laws on those of Babylon, though they tempered their severity.

Government

Some researchers believe that the early Hittite government was the first constitutional monarchy. The *pankus*, probably an assembly of noblemen, monitored the king's activities in relation to their laws and probably had the power to remove and install kings as needed. Because they had no law of succession until circa 1500 BC, the death of a king prior to then often triggered a struggle for power. The authority of the *pankus* waned as the empire began to grow and after a law of succession was adopted.

During the empire years, the Hittite ruler was called the Great King. Each year the rulers of vassal states brought gifts to Hattusas and pledged their loyalty. In return for military protection and favorable trading status, vassal states contributed money and troops to the empire.

Diplomacy

Extensive records and correspondence preserved on clay tablets have revealed much detail about Hittite diplomacy and politics. Decipherment of specific tablets connected the Hittites with two of the most famous events in antiquity—the sacking of the legendary city of Troy from the *Iliad* and the death of the Egyptian boy pharaoh Tutankhamen. Diplomatic letters to a city on the east coast of Asia Minor helped establish the site of the city of Troy.

In 1353 BC the greatest Hittite king, Suppiluliuma I, was besieging the city of Carchemish that controlled an important ford and trade route over the Euphrates River. During the siege he received a letter from Ankhesenamun, the newly widowed wife of Tutankhamen. The queen of Egypt asked that Suppiluliuma send one of his sons to be her new husband and king of Egypt. The stage was set for a very important alliance by marriage. Suppiluliuma took too long to investigate and negotiate, however. An Egyptian courtier-priest seized the widow and the throne, and peace between the two great powers was not arranged until 70 years later.

Military

Hittite foot troops made extensive use of the powerful recurved bow and bronze-tipped arrows. Surviving artwork depicts Hittite soldiers as stocky and bearded, wearing distinctive shoes with curled-up toes. For close combat they used bronze daggers, lances, spears, sickle-shaped swords, and battle-axes shaped like human hands. Soldiers carried bronze rectangular shields and wore bronze conical helmets with ear flaps and a long extension down the back that protected the neck. They were apparently very competent at conducting sieges and assaulting cities that resisted.

They were possibly the first to adopt the horse for pulling light two-wheeled chariots and made these vehicles a mainstay of their field armies. Egyptian engravings of the Battle of Kadesh show three men in the Hittite chariots using spears, but other evidence suggests that they carried only a driver and archer. Perhaps the chariot archer replaced the chariot javelin thrower. Hittite chariot armies were feared by most of their contemporaries.
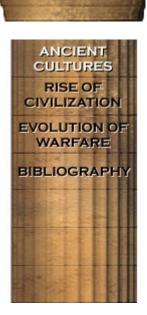
Decline and fall

Following the establishment of peace with Egypt around 1280 BC, there ensued 80 years of relative peace and prosperity for much of the civilized world. During the great catastrophe circa 1200 BC, however, the Hittite empire was suddenly destroyed. The fortifications at Hattusas were thrown down and the city burned. Stone sculptures were smashed apart. It is not known by whom, but it is possible that the Hittite armies fell off in ability during decades of relative peace while the growing riches of the empire made it an ever more attractive target, probably to barbarians from the west and north. The Kaskans, barbarians from the Russian steppes, penetrated the empire around 1300 BC and plundered Hattusas. They may have returned to finish the job for good.

Legacy

The legacy of the Hittites is limited because they were lost as a culture until rediscovered only recently. They are remembered in the Bible as relatively small but sturdy warriors, but for little else. A small remembrance of the Hittites is their pointed shoes with turned-up toes seen in many carvings and reliefs that survive. This style of shoe is still seen occasionally in Turkey as ceremonial dress.

Minoan culture (2200 to 1200 BC)

Primitive agricultural communities sprang up around the Aegean Sea by 6000 BC but this area lagged behind Egypt and Mesopotamia in advancing toward civilization. For reasons not yet understood, the island-based Minoan culture made a sudden leap forward around 2000 BC and became the first civilization of Europe. The sudden take-off may have been stimulated by trading contact with Mesopotamia through Levant ports or through contact with Egypt. One theory suggests that refugees from Egypt during a time of turmoil may have emigrated to Crete and brought technology and ideas with them.

Location

The Minoan culture was centered on the island of Crete, but extended to other nearby islands, including Thera and Rhodes. They may have colonized the Anatolian coast at Miletus and elsewhere. By the extension of trade, they influenced the developing Greek culture on the mainland and other Aegean islands.

Capital
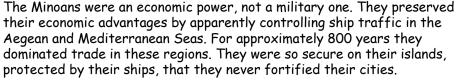
The palace at Knossos on Crete was the capital of the Minoan civilization. It remained a hidden ruin until rediscovered and revealed in the twentieth century.

Rise to power

The Minoans were an economic power, not a military one. They preserved their economic advantages by apparently controlling ship traffic in the Aegean and Mediterranean Seas. For approximately 800 years they dominated trade in these regions. They were so secure on their islands, protected by their ships, that they never fortified their cities.

Economy

Crete was rich in natural resources, including farmland, water supplies, timber, copper, building stone, and access to the sea. The Minoans were prosperous thanks to agriculture and fishing, but grew rich primarily on trade.

The Minoans grew grain, fruits, herbs, and olives. Grain, wine, olive oil, timber, ceramics, and manufactured goods were their principal exports. They imported tin, silver, gold, linen, luxury items, and raw materials for manufacturing.

Religion and culture

The high standard of living, the relative abundance of food and other good things, and the security of their island homes gave the Minoans an outlook on life substantially different from other contemporary cultures. Perhaps because life was good, worship and communication with gods was not stressed. They built no great temples. Their religion was dominated by female goddesses who protected the household, the crops, and the animals. The Minoans made regular offerings of food, statues, and other objects.

The Minoans may have practiced human sacrifice at one time. There is a famous tale of a minotaur, half man, half bull, who lived in a labyrinth beneath the palace. Young people were sacrificed to the minotaur each year. The high priest or king may have worn a bull mask for the sacrifice, creating the illusion of half man, half animal.

They believed in an afterlife and buried the dead with food and possessions that would be of use. Two sacred symbols were bull horns and the doubled-sided axe.

The Minoans developed a hieroglyphic writing system around 2000 BC, perhaps following trading contact with the Egyptians. By 1900 BC they had developed a new script now called Linear A. A third script called Linear B came into use at Knossos around 1450 BC. To date, only Linear B has been deciphered, but most of the surviving examples are accounting records that reveal little about their history and culture.

Surviving artwork shows the people of Crete engaging in the sport of bull-jumping. The significance of this activity is not known. Young men and women are depicted approaching a charging bull, grabbing it by the horns, and somersaulting over the animal's back to land behind it.

The everyday life of the Minoans was pleasant and relatively free of war and unrest, as witnessed by the richness and exuberance of their frescos, wall paintings, and decorative objects.

Government

The great palace at Knossos was also a giant warehouse. The distribution of food and other goods may have been organized from here.

The only king whose name survives was Minos. It may be that the word *minos* referred to the office, not the man, like the Egyptian term pharaoh.

Military

The Minoans had little apparent need for an army, relying instead on their navy to keep any enemies from approaching. Minoan ships were galleys, manned by rowers on both sides. Narrow galleys were fast and maneuverable, allowing them to overtake slower sailing ships of the day. They did not employ rams at this early date, according to the evidence of surviving artwork.
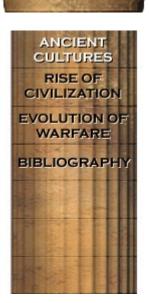
Decline and fall

The idyllic life of the Minoans was disrupted by natural disasters. The archaeological remains indicate that the palace of Knossos was destroyed by an earthquake in 1700 BC and rebuilt. The nearby island of Thera was partially sunk by a volcanic eruption and the resulting tidal wave probably struck Crete, causing extensive damage. The Minoan culture suffered from recurrent earthquakes and the Thera explosion, but the extent of the damage and its effect on their civilization is debated.

There are two main scenarios for the end of the Minoan culture. According to the oldest theory, mainland Greeks invaded around 1450 BC, essentially destroying the culture, although it lingered for 700 years more until mainland Greece itself was overrun. In the second scenario, based on more recent research, the Minoans suffered through disaster and a resulting loosening of their control of sea trade and movement, but did not succumb to the mainland Greeks. The Minoans were instead destroyed along with the Myceneans on the mainland by barbarians as part of the catastrophe of 1200 BC. Evidence suggests that by 1180 BC the Cretans had moved from coastal towns and palaces to defensive city sites high in the hills. Attacks and the threat of further attacks were the probable cause of this shift.

Legacy

The Minoans are remembered today for their fabulous palace and frescoes at Knossos, now partially restored. It may have been the largest and most beautiful palace of the late Bronze Age. They are also remembered for their mysterious writings, some of which continue to defy linguists.

Persian culture (700 to 332 BC)

Location

The Persians were originally one of several Aryan tribes that migrated into modern Iran from the plains of southern Russia around 1400 BC (the word Iran is derived from Aryan). They settled the southwest corner of the Iranian plateau, on the north shore of the Persian Gulf, on lands vacated by the Elamites who had been conquered and enslaved by the Assyrians. The Persians were separated from the great civilizations of Mesopotamia by the Zagros Mountains.

At its peak, the Persian Empire stretched from the Indus River across the Near East to the eastern Mediterranean coast, south into Egypt along the Nile to Sudan, across Anatolia, and into Thrace and Macedonia.

Capital

During the history of the Persian Empire, five cities served as the royal capital. The first was Pasargadae, built by Cyrus to commemorate his victory over the Medes. It was remote and impractical as an administrative capital. Babylon was rebuilt by Cyrus as a royal capital for his use when affairs brought him to Mesopotamia. Darius moved the empire's administration to Susa, the old Elamite capital, perhaps for efficiency. It was well-located at the hub of a road and water transport network.

The extreme summer heat of Susa drove the Persian court first to the higher altitudes of Ecbatana, the old Median capital in the Zagros Mountains. In 520 BC Darius began building the greatest of the Persian capitals at Persepolis. Construction of Persepolis was interrupted for long periods and was not completed nearly 200 years later when the city was sacked and burned to the ground by Alexander.

Rise to power

The Persians settled on relatively poor and remote lands where they were little troubled by first the Elamites to their west, then the Assyrians who destroyed the Elamites around 640 BC, and then the Medes (to their north) and resurgent Babylonians who conquered Assyria in 609 BC. Throughout this period, the various petty Persian kings were vassals of the richer and more advanced Medes.

Cyrus II became king of the small Persian kingdom of Anshan in 559 BC. Within ten years he had subjugated the eastern part of Persia and established a reputation among even his rivals as a natural leader to

whom men gravitated. When the Median king attempted to reassert control over Persia around 550 BC, the Median army revolted on the battlefield, handing over their king to Cyrus and surrendering their own capital at Ecbatana. The Median Empire, stretching across northern Mesopotamia into Anatolia, underwent a nearly bloodless change of management. Cyrus II was now Cyrus the Great, founder of the Persian Empire.

Cyrus then conquered in quick succession the Lydians of Asia Minor (led by the King Croesus of legendary wealth who had invented coins), Greek colonies on the Aegean coast, the Parthians, and the Hyrcanians to the north. In 541 BC he marched into the steppes of Central Asia, establishing a fortified border along the Jaxartes River. In 540 BC, his 19th year as king, Cyrus turned on his onetime ally, Babylon. After one battle, the army and people of Babylon surrendered their king, city, and empire that stretched from southern Mesopotamia to Phoenicia. Before Cyrus could expand into Egypt or toward Greece, however, he was killed fighting nomadic tribesmen who were threatening his eastern provinces.

The first successors to Cyrus conquered Egypt, gathered new provinces in North Africa, and extended the empire into India to the Indus River. They turned next against the Greeks who were commercial rivals of Persian Phoenicia. In 513 BC a huge floating bridge was built across the Bosphorus Strait, linking Asia and Europe. The Persian army took Thrace and Macedonia to cut off grain to the Greeks, but could not subjugate the elusive Scythians. This was the peak of the Persian Empire. The stage was set for the mighty struggle with the city-states of Greece that lasted 50 years.

Economy

The early Persian economy was based on herding because the land was so poor for agriculture. The Persians attributed their toughness to the meager lifestyle to which they had been acclimated for generations.

The sudden acquisition of the Median Empire, Lydia, Babylon, Egypt, and gold-rich areas in India made Persia an economic powerhouse. It controlled the rich agricultural areas of Mesopotomia, the grasslands of Anatolia, the trade routes in every direction, and rich deposits of metals and other resources. Great King Darius instituted many economic innovations and reforms: systematized taxation; standardized weights, measures, and monetary units (the first successful widespread use of coins); improved transportation routes, including the 1600-mile Royal Road from Susa to Sardis and an early Suez Canal; royal trading ships; promotion of agriculture; a banking system; and promotion of international trade.

Religion and culture

The Persian kings and nobility were Zoroastrians, a religion named after its founder, Zarathustra, called Zoroaster in Greek. Zarathustra conceived his religion around 600 BC, and it had great influence later on Judaism, Christianity, and Islam.

Zoroastrianism was monotheistic, centering on one supreme god who created everything material and spiritual. The powers of good and evil worked on humans who had to choose constantly between the two. An

eternal afterlife of pleasure or torment were the possible results of god's judgment after death. These concepts of monotheism, good versus evil, free will, and posthumous reward or punishment were a departure from the polytheistic religions prominent in the area previously. These concepts greatly influenced religions that followed.

Government

The head of the Persian government was the king whose word was law. His authority was extended by a bureaucracy led by Persian nobles, scribes who kept the records, a treasury that collected taxes and funded building projects and armies, and a system of roads, couriers, and signal stations that facilitated mail and trade. In the early years when the army was predominately Persian, it capably preserved the internal and external peace.

Much of the empire was divided into provinces called satrapies, ruled by a satrap. All of Egypt was usually a single satrapy, for example. The satraps were normally Persians or Medes to help ensure their loyalty. They ruled and lived like minor kings in their own palaces. Some satraps became strong enough to threaten the king. Strong kings kept their satraps in check by holding close the reins of the armies and the treasury.

Military

All Persian men to the age of 50 years were obligated to serve in the armies of the Persian Empire. Greek historians report that boys were trained in riding, archery, hand-to-hand combat, and mounted combat. At the age of 20 they were eligible for military service.

The army consisted mainly of four types of units: spearmen for infantry shock combat, foot archers to act as skirmishers, light cavalry armed mainly with bows, and heavy cavalry that wore some armor and carried spears. In the early years of the empire, the predominantly Persian army was highly motivated and responsive on the battlefield, making it a dangerous foe.

The elite of the Persian army were the Ten Thousand Immortals, so called because the unit was always kept at a full strength of 10,000 men. The loss of any man to death or incapacitation was immediately made good by promotion from another unit. One thousand of the Immortals were the king's personal bodyguards.

In its later years, the ratio of Persians to provincial levies declined. The hardened army of disciplined and well-trained Persians was replaced by a mixture of formations, weapons, and methods. These troops lacked the discipline of the Persians and proved difficult to maneuver and employ on the battlefield.

Decline and fall

The Persian Empire peaked around 500 BC, although the seeds of its decline were planted earlier. A recurring problem was court intrigue and ill-defined rules for succession. The death of a king often triggered a scramble for the throne that exhausted the treasury, eroded morale, and loosened the governmental hold on the provinces. Wasteful spending

led to inflation and unpopular tax increases. Disputes in the provinces, usually over taxes, were often settled brutally, further increasing dissatisfaction. Five of the six kings that followed Xerxes' death in 464 BC were weak leaders that held the empire together only by increasingly harsh measures.

The Greeks and Persians had been on a collision course for many years when conflict began between the two cultures in 499 BC. Despite what appeared to be overwhelming strength and economic resources, the Persians failed to defeat the Greeks in 50 years of war on land and sea. The Greeks, though victorious, were not capable immediately of carrying the war into Persia.

Following the Greco-Persian Wars, the weak Persian kings concentrated on maintaining their ever more tenuous hold on the empire. Recurring revolts in outlying provinces, especially Parthia, Lydia, and Egypt, weakened the economy and military. Before the empire could dissolve from within, it was dispatched by Alexander the Great in an amazingly short period of time. Alexander invaded in 334 BC, captured Lydia by 333, took Egypt in 332, and became king of Persia in 331.
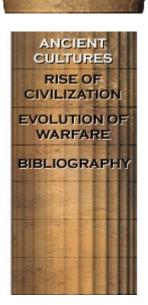
Legacy

The Persians are best remembered in the West as the antagonists in the dramatic Greco-Persian Wars, from which so much history has been preserved. The most famous events from this period are the bridging of the Hellespont, land battles at Marathon, Thermopylae, and Platea, the great sea battle at Salamis, and the sacking of Athens. Most of this history is biased, however, because we have mainly the Greek accounts to study.

The Persians are also remembered in several Biblical accounts for the tolerance of their wise early kings and the decadence of their later courts. Cyrus the Great is remembered especially for freeing the Hebrews held prisoner in Babylon when he took that city and allowing them to return to Israel.

The greatest legacy of the Persians was the aggregation and mixture of Asia and African cultures. Most of the advances of civilization to that point had come from these areas. This cultural gift was preserved by the Persians and passed on first to the Greeks and then to Europe and the West.

Phoenician culture (1200 BC to 146 BC)

There was never a country or empire called "Phoenicia." The historical name of this culture was coined by the Greeks and was not their own. The name Phoenicia derives from the Greek word phoenix, meaning in this case a dark red or purple-brown color. The Phoenicians were renowned for their cloth dyes, especially an expensive purple one popular with royalty. Because Greek language and writings were preserved in abundance, versus Phoenician texts which are very scant, the name stuck.

Location

The Phoenicians appeared on the historical scene around 1200 BC, a time when most of the civilized world was being overrun by barbarians. In the political and military void of a 400-year ancient dark age, this small group of traders were able to prosper and gradually expand their influence. Instead of acquiring a physical empire of contiguous lands, they gradually built, instead, a large trading and colonial network from their home base of a few independent cities along the coast of what is now Lebanon.

They were the remnants of the Canaanites, a Semitic people who occupied city-states in this region prior to 1200 BC. The most important of their early cities were Tyre, Sidon, Berytus (modern Beirut), and Byblos. These coastal cities were hemmed in on the land side by the Lebanon Mountains. The only obvious opportunity for expansion and economic gain was by sea.

Rise to power

Prior to the catastrophe of 1200 BC, Canaanite traders had been restricted to perhaps the Levantine coast, Egypt, and the southern coast of Anatolia. The Minoans on Crete blocked entrance into the Aegean, controlled all trade in that area, and perhaps even controlled trade further west. The Canaanite coastal towns were usually controlled by Egypt, and one of their principal businesses was providing wood (the cedars of Lebanon) to the Nile region.

The Minoan civilization was destroyed in 1200 BC, removing most of the constraints on Mediterranean and Aegean sea trading by others. The Phoenicians were the most aggressive of those attempting to fill the void. Their cities were well-positioned for this enterprise by being located literally in the center of the known world. The Aegean, Mesopotamia, and Egypt were all roughly equidistant to the west, south, and east. For any of the three regions to trade with another, the easiest

trade route was through the Phoenician cities.

By the ninth century BC, the ancient dark age was nearing an end. The Phoenicians were growing rich as traders and this attracted enemies, principally the Assyrians. In the face of repeated assaults or heavy tribute payments at the least, the Tyrians adopted the strategy of establishing colonies to the west. Colonies were removed from the grasp of the Assyrians and also helped with the exploitation of metals and trade in the western Mediterranean.

The most important Phoenician colony was at Carthage, established around 700 BC. Other important colonies were in Sicily, Corsica, Sardinia, and Spain (modern Cadiz and Cartagena). Over the next 500 years Carthage grew rapidly in size and power. Most of its wealth came from the ore mines of Spain. Carthage fought for control of the western Mediterranean with the Greeks first and then the Romans.

Economy

The early Phoenician economy was built on timber sales, wood working, and cloth dyeing. Dyes ranging in color from a pink to a deep purple were made from the rotting gland of a sea snail. Gradually the Phoenician city-states became centers of maritime trade and manufacturing. Having limited natural resources, they imported raw materials and fashioned them into more valuable objects that could be shipped profitably, such as jewelry, metalwork, furniture, and housewares. They borrowed techniques and styles from all corners of the world that they touched as traders.

While exploring the western Mediterranean, they either discovered large metal deposits in Spain or took them from Greeks who may have been there first. By fortifying sites on Sicily and North Africa, they effectively denied other traders access to the riches of Spain, the west African coast (gold, exotic woods, and slaves), and Britain (tin, a crucial strategic resource required to make bronze).

Religion and culture

Phoenician religion was polytheistic and their gods required continual sacrifices to forestall disaster, especially Baal, the god of storms. No significant Phoenician temple has yet been discovered, but most of their ancient cities lie buried under modern cities. The Bible recounts human sacrifices by the Phoenicians but this practice was eventually stopped. It carried on in Carthage, however. A cemetery outside of Carthage was found to contain thousands of urns of infants sacrificed to the gods. Noble families of Carthage got into the habit of substituting animals and slaves for their children, but following a military disaster in 320 BC, 500 infants from the best families were sacrificed.

Early Phoenician culture was influenced to a large degree by their Semitic origins and Semitic neighbors. Their later culture was heavily influenced by the Greeks. There are few objects known today that are clearly Phoenician.

One of their lasting contributions to civilization was a proto-alphabet where each letter represented a consonant. This cut down significantly the number of symbols required to make written words. When written,

the vowels were implied. Later advances by the Greeks added symbols for vowel sounds, creating the first true alphabet.

Military

When the Phoenicians began competing with the Greeks for trade and colonies, the contest led to construction of the first ships built expressly for war. These were rowed galleys armed with a ram at the front and marines for boarding. Sea warfare grew in importance during the fifth century when Persia fought the Greek city-states for control of the Aegean, western Anatolia, and eastern Mediterranean. By this time the Phoenician cities were under control of Persia. Phoenician ships made up the bulk of the Persian fleet that was defeated at Salamis in 480 BC. Phoenician galleys of the time were larger and less maneuverable than their Greek counterparts, and this was a fatal shortcoming in restricted waters.

The Carthaginian navy dominated the early Punic Wars with Rome, but the Romans captured a Carthaginian ship that went aground and built duplicates. The Romans eventually cleared the Mediterranean of Carthaginian ships and carried the wars to a successful conclusion in North Africa.

The Carthaginians had the only significant land army that can be considered Phoenician in derivation. Their greatest general was Hannibal, who invaded Italy from Spain, passing the Alps in winter with his army and elephants. Most of his troops were Celts enlisted from Spain and Gaul. One strength of his army was cavalry from North Africa that was usually able to drive off the Roman cavalry, surround the Roman infantry, and help annihilate it. The Romans defeated Hannibal eventually, not by fighting him, but by attacking where he wasn't—Spain first, and then North Africa.

Decline and fall

The Phoenician home cities were periodically under the thumb of one eastern conqueror after another from roughly 900 to 332 BC. They were never strong enough to hold off the powerful armies from Assyria, then Babylon, and then Persia, although they were often rich enough to buy them off. In 332 BC Alexander the Great took them one by one, ending their on-again, off-again independence. They became Greek cities and lost their identity as Phoenician for good.
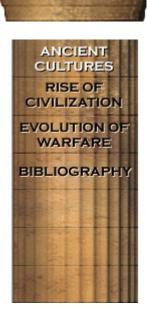
The Carthaginians lasted another 200 years. Having held off Greek expansion past Sicily successfully for many centuries, they met their match in the more populous and better organized Romans. At the end of the Punic Wars in 146 BC, the people of Carthage were carried off to slavery and the city was destroyed.

Legacy

The Phoenician tradition as traders carried on in Lebanon down through the years to modern times, regardless of who was in political control. Phoenicians are also recalled as great mariners. They are believe to have been the first civilized culture to reach Britain and the Azores. There is evidence that Phoenicians circumnavigated Africa on commission by the

Egyptians around 600 BC. There is some questionable evidence that they reached the New World.

Their most important contribution was their revised alphabet, which they spread around the known world. When further refined and spread by the Greeks and Romans, it became the alphabet used today by most western cultures.

Shang culture (1800 BC to 1000 BC)

China has been a mystery to much of the world since word of its existence first spread west in ancient times. It was isolated first by geography, and then by a conscious policy on the part of its rulers. It was thought to be one of the oldest civilizations but modern archaeology and research has revealed that the civilizations on Crete, in Egypt, and in Mesopotamia predate it significantly.

China encompassed a number of fertile river valleys, especially the Huang Ho (Yellow) and Yangtze, that were ideal sites for agriculture. New technologies spread gradually from the west and the first Chinese farming communities appeared along these rivers around 5000 BC. Although all ancient civilizations eventually shared a common threshold of agricultural and technological knowledge, the relative isolation of China allowed it to form a unique culture. The Chinese distinguished their civilization by being first to achieve many important advancements.

Capital

The first recognized dynasty of Chinese kings is that of the Shang, who were located in the north along the Huang Ho River. Their principal city was An-yang, southwest of modern Beijing. The Chou dynasty overthrew a decadent Shang king and ruled for 400 years from the city of Hao in the northwest province of Shensi. When barbarians from the north sacked Hao, the Chou capital was moved east to Loyang. Although the Chou dynasty soon lost control of most of China, it continued to rule a state of varying size from its central position until 221 BC. In 221 BC China was unified by the Ch'in, from whom the country gets its modern name. A new capital was built at Hsien-Yang, also southwest of modern Beijing.

Rise to power

The Shang dynasty ruled over a conglomeration of northwestern Chinese feudal territories from 1766 to 1027 BC. The remainder of the country was made up of territories that the Shang could not reach or influence. In 1027 BC a particularly decadent Shang ruler lost control of the kingdom and succumbed to either revolt or the deliberate attack from the more western province of Chou. A Chou dynasty established itself and then expanded its control to the middle and southern areas of China over the next 400 years. With the help of a deposed queen, barbarians from the north invaded Chou in 722 BC and sacked the capital.

The Chou dynasty relocated further to the east but never regained its dominance. The weakening of the Chou led to the Spring and Autumn

period (722 to 481 BC) that takes its name from the title of a history of the era. New feudal kingdoms emerged and fought each other for territory, strategic materials, and population centers. Warfare between the feudal territories and barbarians to the north was incessant. By 500 BC, the 200 feudal territories of China had consolidated into 20 independent states.

A peace was arranged around 540 BC at a conference instigated by smaller states that had suffered continual invasion and despoiling. Peace lasted 40 years and then hostilities resumed, setting off the age known as the Warring States (481 to 221 BC). Seven major states emerged in this period, but each was subjugated by the Ch'in, one after the other, beginning in 230 BC. In 221 BC Prince Cheng, the Tiger of Ch'in, proclaimed himself Shih Huang-ti—the first emperor of China.

Economy

Early Chinese farmers grew millet and vegetables, and kept dogs and pigs. By 4000 BC rice was being grown and became the most important food crop of Asia. By 2500 BC cattle, chickens, sheep, and goats were raised, and water buffalo were being used to pull plows and wagons.

Despite the ravages of war, the ancient Chinese economy continued to grow and improve. An elaborate road network improved communications and trade. Massive irrigation projects dammed entire rivers, breaking them into small streams that carried water over extensive plains for rice cultivation. Most impressive were canals connecting rivers or taking water into previously arid regions. The first of these was built in 486 BC to supply troops. The eventual dominance of the Ch'in was due in part to the rapid population growth that resulted from canal and irrigation projects that dramatically increased food production.

Bronze did not reach China until around 1500 BC, and iron followed in the sixth century BC. Another advantage of the Ch'in was their iron deposits and iron industry. Iron tools were more efficient and iron weapons gave their soldiers an advantage in battle. The Chinese were casting iron seventeen centuries before that technology was achieved in Europe, and iron-making was a key factor in the shaping of their society.

China was unique to the ancient world for its general lack of slavery and a large peasant class of land owners. The reasons for this are not fully understood. These two conditions probably contributed to the enormous food production and population that China supported.

Religion and culture

The religion of ancient China was dominated by ancestor worship. Kings traced their ancestry back directly to Shang-Ti, the ancestor and founder of the people, and the ruler of the natural world. Shang-Ti and deceased forebears were petitioned by sacrifices for guidance in all aspects of life. Political power was linked to the spiritual. The ruler was the Son of Heaven and ensured the welfare of the people. These ancient beliefs were modified eventually into a state religion by two competing philosophies that developed around the sixth century BC in response to growing dissatisfaction with feudalism.

The oldest of these philosophies was Taoism, based on a collection of

profound sayings. Conformity to the Tao was achieved by unassertive action and simplicity. Taoism urged a return to a naturally sharing society that was cooperative, not acquisitive. A typical Taoism saying read "He who feels punctured must have been a bubble."

The second and most influential philosophy was Confucianism, a more practical and socially aware doctrine. This was a philosophy of honesty and cooperation in relationships based on loyalty to principles. Virtue was acquired by self-cultivation and self-denial. The Confucian ideal was a perfection of the human personality through sacrifice in deference to traditional values passed down from one's ancestors. Heaven was the reward of the dutiful descendant.

Government

The various dynasties of China ruled over a hierarchy of feudal states linked by kinship and vassalage. Feudal society was supported by peasant farmers who produced a surplus of food and provided unpaid labor.

Following the formation of the first empire in 221 BC, the long failing feudal society was replaced by a new structure. The aristocracy were only relatives of the emperor. Four classes of society were ranked below them. The *shih* were lesser nobility, land-owners, and scholars. The *nung* were the peasant farmers who paid taxes, labored on public works, and served in the armies. The *kung* were the artisans, and the *shang* were the merchants.

Architecture

Ancient Chinese architecture was concerned primarily with building walls. Walls defended villages and towns, but also divided towns into sections. Controlling access to sections of cities enhanced the power of authorities. The earliest walls were built of earth tamped down between wooden slats that held it in place. The use of earth in this manner led to two major characteristics of Chinese architecture—walls did not usually bear loads and roofs supported generous overhangs to keep water off the walls. Walls were improved first with sun-dried bricks on their facings and then with fire-baked bricks by the end of the Warring States period.

The Great Wall of China was constructed following the unification of 221 BC for two purposes. It was intended first to keep out or discourage attacks by mounted barbarians from the north. It also was an outlet for the labor of thousands of men who had previously served in the massive armies now made unnecessary by the unification.

Military

The ancient Chinese fielded armies that at times dwarfed those seen previously in the Near and Middle East. Casualties from a battle often numbered 100,000 or more according to records well regarded today for accuracy. Professional armies were supplemented by large militia levies called up for temporary service.

The most militaristic states were those to the north and northwest who were forced to become proficient in war because of repeated attacks by mounted barbarians. Provinces in this region learned to fight large field

armies from neighboring states as well as the barbarian hordes. The three dominant dynasties of ancient China originated in the northern provinces.

Chariot archers dominated the battlefields of the Bronze Age Shang era, but they were supplanted by mounted archers and large infantry armies armed with iron weapons. An early technical achievement was the crossbow, not seen elsewhere for many centuries. Crossbows were manufactured in large quantities for the arming of the militia, as well as regular troops. This fact influenced the widespread building of walls for protection. For reasons not known, armor was made predominantly of wood and bamboo.
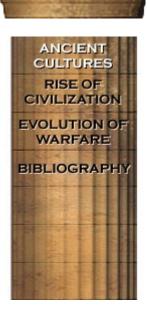
Decline and fall

The empire established in 221 AD was further modified by the former Han dynasty up to 9 AD. In that year a usurper grabbed the throne and ruled for 16 years. Attempts to reform land ownership failed, however, and the usurper was eventually beheaded. This period makes a convenient break point in Chinese history, even though the empire continued to exist into the twentieth century AD.

Legacy

The principle legacy of ancient China was its philosophy, including the concepts of face, ancestor worship, virtue, and balance with nature (Yin-Yang), which continue to shape its culture today. The most recognizable physical legacy is the Great Wall, the only man-made object on Earth visible from space.

Sumerian culture (5000 to 2230 BC)

The Sumerians were one of the earliest civilizations. Their growth and expansion was dependent on rich river valley farmlands. They were not as fortunate as others in terms of mineral resources or strategic position, however, and did not enjoy the long existence of the Egyptians. They are considered one of the most important early cultures, nevertheless, because of the many advances attributed to them. Because their location was weak in terms of defense and poor in terms of resources, they were forced to innovate. In many ways they were more important to history because of their innovations than the much richer Egyptians.
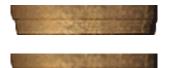
Location

Sumer was located in southern Mesopotamia (meaning "between the rivers") where the Tigris and Euphrates Rivers come together before flowing into the Persian Gulf. By 5000 BC primitive farmers had come down to the valley from the Zagros Mountains to the east. The land was rich but baked hard in the summer sun after the late spring river floods. The early settlers learned how to control some of the flooding with dikes and how to irrigate their summer fields. Early settlements at Ur, Uruk, and Eridu grew into independent cities first and then city-states.

Capital

As a conglomeration of city-states, there was no clear capital for the Sumerians because the center of power shifted from time to time. The cities of Ur, Lagash, Erech, Eridu, and Uruk were the most important.

Rise to power

From 5000 to 3000 BC, agricultural communities of Sumer gradually coalesced into city-states along the banks of the Tigris and Euphrates Rivers. The peak of this city-state culture lasted from 2900 to 2400 BC. They warred with one another from time to time and competed for land and trade, but never conglomerated or built an empire that expanded from their traditional homeland.

The city-states of the river valley were relatively rich from food production, manufacturing, and their position along important trade routes. This made them tempting targets when more powerful and warlike neighbors came into existence to the north and east.

Economy

The Sumerians grew wheat, barley, peas, onions, turnips, and dates. They raised cattle and sheep, fished, and hunted wildfowl along the river. Food was generally abundant and populations grew accordingly.

There was no copper in the river valleys, but copper was found in the mountains to the east and north. The Sumerians learned how to obtain copper from ore by 4000 BC and to make bronze by 3500 BC.

They traded food, cloth, and manufactured items for raw materials, such as timber, copper, and stone, which they fashioned into items of everyday use, weapons, and more valuable trade goods. Their merchants traveled up the Tigris and Euphrates to trade with the people of Anatolia and the Mediterranean coast. They also traded in the Persian Gulf for items from India and further east.

Religion and culture

The Sumerians worshipped hundreds of gods, with each city having its own patron deity. The principal gods, such as Enlil, the god of air, were too busy to bother with the plight of individuals. For that reason, each Sumerian worshipped a particular minor god or goddess who was expected to interact with the major gods.

The Sumerians did not believe in an afterlife and were realistic about the limits of human goodness. They accepted that although the gods were above question, they were not always kind.

The soul and center of each city-state was its temple to the patron god. The Sumerians believed that the god owned the city-state. Part of the land was farmed directly for the god, often by slaves. The remaining land was farmed by the temple staff or by farmers who paid rent to the temple. Rents and offerings paid for temple operation and supported the poor.

Slaves were an important part of the community and were one objective of any military campaign. Even locals could become slaves to satisfy debts. Slaves were allowed to work extra hours for themselves and use any savings to buy their freedom.

Government

Each city in Sumer was ruled at first by a council of elders, although a war leader, called a *lugal*, was selected to lead the army during conflict. Eventually the lugals assumed power as kings and established dynasties.

Evidence suggests that the Sumerians may have taken the first steps toward democracy by electing a representative assembly. This consisted of two houses—a senate of important citizens and a lower house made up of those available for military duty.

Preserved clay tablets reveal that the Sumerians maintained courts of justice where people could expect a fair trial. One table recorded the oldest murder trial in history.

Most of the food production and distribution was controlled through the temple. A noble class arose based on land ownership, control of trade, and manufacturing. Most trade and manufacturing was outside the

temple's control.

Architecture

The Sumerians were handicapped by having no easy access to stone or wood for building. Sun-dried mud bricks were their main building material and this required some ingenuity. They were the first to employ the arch, vault, and dome. Their cities were completely enclosed by brick walls. Their most important buildings were temples, built as large mounds called ziggurats. Through cycles of attack, destruction, and restoration, the temples were rebuilt again and again at the same site, gradually getting larger with each reincarnation. Mud bricks eroded and crumbled much more quickly than stone, however, and little Sumerian architecture survives.

Military

The key influence on the Sumerian military was their poor strategic position. Natural obstacles for defense existed only on their borders to the west (desert) and south (Persian Gulf). When more populous and powerful enemies appeared to their north and east, the Sumerians were susceptible to attack.

Surviving artwork and archaeological remains indicate that the Sumerian soldiers used spears and short swords of bronze. They wore bronze helmets and carried large shields. Their armies were not particularly noted but records are sparse.

They engaged in siege warfare during their many inter-city wars. Mud brick walls did not stand against determined attackers who had the time to pry out the bricks or pound them to dust.

The Sumerians invented chariots and were the first to use them in battle. These early chariots were four-wheeled and pulled by onagers (wild ass), and were not as effective in battle as the later two-wheeled design pulled by horses. Sumerian chariots may have served primarily as fast transports, but surviving artwork suggests that spears or javelins were thrown from them.

Decline and fall

A group of Semitic people called the Akkadians settled north of Sumer along the Tigris and Euphrates Rivers. The Akkadians adopted very quickly the culture, religion, and writing of the more advanced Sumerians who had preceded them. In 2371 BC Sargon I seized the throne of Kish and gradually conquered all of the city-states of Akkadia. He turned south and conquered the city-states of Sumer, which were unable to unite in defense. Sargon established the first empire of history during his reign from 2371 to 2316 BC, extending his control along the Fertile Crescent from Elam, to the east of Sumer, to the Mediterranean coast.
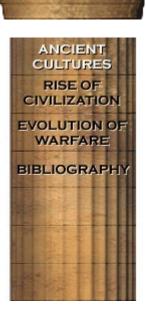
Sargon's empire collapsed after his death but was restored briefly by his grandson. Around 2230 BC the Akkadian empire was destroyed by an invasion of Gutians, barbarian hill people from the Zagros Mountains. New cities and towns soon grew up along the river valleys but the Sumerians were gone as a distinct and independent culture.

Legacy

The Sumerians are most noted for the invention of the wheel and writing (both circa 4000 BC). The wheel was important for transport and for pottery making (the potter's wheel). Sumerian writing, called cuneiform, consisted of groups of stylus wedge impressions pushed into clay to form stylized pictograms representing words. This writing grew out of record keeping and seals from business transactions.

They were among the first to use boats, including round boats made of hide stretched over a wooden framework. These *coracles* were especially popular among the reeds and waterways of the river delta.

Yamato culture (300 to 800 AD)

The Yamato period of Japanese culture is also called the age of the great tombs because of the appearance in these centuries of great tombs and tomb clusters, presumably for the burial of rulers and other elites. The name Yamato comes from the region of Japan that was the home of the first clan to consolidate rule over most of the islands. During the Yamato period, Japan accelerated its advance in technology by adopting the cultivation of rice, improving its pottery, developing iron working, building social hierarchies, and accomplishing a political, economic, and cultural consolidation of the islands.

Location

The hereditary lands of the Yamato clan are on a peninsula on the southwest coast of Ise Bay. This bay is located on the main island of Honshu, southwest of modern Tokyo.

Capital

Prior to the late seventh century AD, there was no permanent capital of Japan. Each king ruled from his own palace, which was usually abandoned following his death. As the Yamato began to adopt the Chinese system of governmental bureaucracy and organization, the need for a permanent seat of government arose. The first capital was founded at Fujiwara in 694 AD and served three emperors before being abandoned in 710. The second capital of this period was built at Heijo (west of modern Nara) and occupied from 710 to 784.

Rise to power

Chinese documents from the second century AD make reference to 100 countries existing in Wa, their name for Japan. By the third century the Chinese refer to a queen of Wa, probably of the Yamato clan, who had consolidated 30 countries under her rule. During this period, the Yamato clan consolidated its control over most of Japan.

In the fourth century, the Yamato extended their rule into southern Korea until they were ousted by the Chinese in 562. For the next 100 years, the Yamato tried to reestablish their influence in Korea but they and their Korean allies suffered a devastating loss at the battle of Hakusukinoe in 663 that drove them from the peninsula.

Economy

The Japanese economy remained dependent on rice growing under the Yamato. It was primarily a barter economy and taxes were paid in rice, cloth, and other commodities by peasants who worked public lands. Beginning with the seventh century, coins were imported from China to facilitate tax collection. An attempt was made to mint Japanese coins, but rulers could not resist the temptation to debase the local coinage and it fell out of use.

Religion and culture

New concepts were added to the ancient Japanese beliefs and rituals during the Yamato period, including respect for clan ancestors and a mythology of divine ancestry for the Yamato dynasty. Under the influence of Chinese Buddhism, the Japanese religion became more formalized as Shinto, the Way of the Kami. The kami were an infinite number of natural spirits and powers that could be called upon for aid or appeased when angered. The hierarchy of Shinto divinities was defined and the mythology was written down. The rulers of Japan descended from the Sun Goddess, the supreme Shinto deity.

Early Shinto was concerned with the present, not the past or an afterlife. It fostered a reverence for a natural universe that was seen as good and ethical. Evil was identified with impurity and the unnatural. Sincere honesty was the central virtue.

Around the sixth century, Buddhism spread across the sea from China and began influencing Shinto. The Buddhist doctrine of salvation was especially popular with the common people.

Government

During the Yamato period, tribal states of various sizes and power were brought together gradually by a dynasty of Yamato clan rulers. The leader of the Yamato in the second half of this period was known as the Daiõ, or Great King. The power of the Yamato was expanded and strengthened through blood ties within the clan, their apparent military supremacy, diplomacy, and manipulation of the sun myth that bestowed divinity on their ancestry.

The different tribal groups or clans were the nobility or *uji* class. Serving the *uji* was an occupational/professional class called the *be*, who worked as farmers, scribes, traders, and manufacturers. The lowest class were slaves. Immigrants fit in among both the *uji* and *be*, depending on their skills and wealth.

Architecture

The outstanding architectural achievements of the Yamato are their tombs. These are mounds of earth in the shape of a keyhole if viewed from above. The largest tombs are found in the Yamato region of Japan, and this is further evidence of power emanating from that locale. The Nintoku tomb on the Osaka Plain rivals the Pyramids in size. The central tomb is 500 meters long and 35 meters high. It is surrounded by three moats with intervening belts of trees and covers 80 acres. Stone burial chambers were excavated in the earth below the central tomb mound.

Tombs thought related to the imperial family are now controlled by a

government agency. Although some have been pillaged in the past, many remain unexcavated.

Military
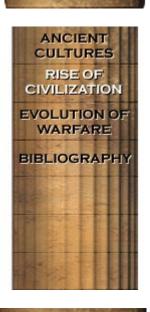
Based on the large numbers of warrior figures, weapons, and pieces of armor found in burial tombs from this era, warfare was apparently a common feature of Yamato culture. Despite the existence of a dominant ruler, clan groups found reason for conflict. All adult men were available for military service and were required to serve for at least one year. The *uji* class provided the elite troops and officers for armies.

Warrior figures from tombs are shown wearing full body armor and visored helmets. The most commonly found weapons are swords, spears, and bow quivers. Horse figures are also found in abundance, suggesting the existence of cavalry. The sudden appearance of horses in burial goods around the fifth century has led to the hypothesis that Japan was invaded by a cavalry army at that time. It is more probable that the horse was an import that became a status symbol for the elite who were most likely to receive a ceremonial burial. The elite *uji* class made up the cavalry of the period because they could afford the horse and equipment.

Legacy

The Yamato period is remembered for the sun goddess mythology from which all later emperors of Japan claimed divine ancestry. The Yamato period also formalized the Shinto religion that would compete with imported Buddhism to the present day. Most modern Japanese consider themselves descendants of the Yamato. The great tombs spread about the countryside are the most material legacy.
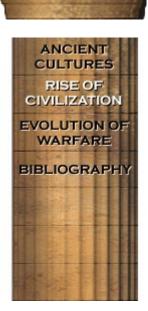
Rise of civilization

Human evolution
Technology: the development and use of tools
Prehistoric human community
Agricultural revolution
First cities
Trade
Religion
Boats and sea travel
Rise of civilization

Human evolution

Anthropologists believe that our human ancestors separated as a species from the apes at least 6 to 12 million years ago. We are handicapped in attempting to determine more accurately when the split occurred and in following the evolution of humans because the fossil record is very scant. Because of the gaps in our knowledge, scientists disagree on many important questions, including which hominids were direct human ancestors and which were only cousins, what factors caused the split of hominids from the apes, and what the key factors were in shaping human evolution. New fossils are discovered frequently, however, and with each discovery we move closer to understanding the story of human evolution and the reasons that humans are so much more intelligent than any other species.

African beginnings

The split with apes is believed to have occurred in Africa. A possible environmental change that reduced forests and increased plains may have forced quadripedal creatures (walking on all fours) to venture into the open in search of food. In time, natural selection led to bipedal motion (walking upright). Preserved footprints indicate that this occurred at least 3 million years ago. The conversion from walking on all fours to walking upright required a significant redesign of the body (longer legs, a basin-like pelvis, a curved spine, an arched foot with toes, new muscles) that would have evolved only if it resulted in major advantages.

The conversion to upright movement may eventually prove to be the key to human intelligence. Although walking upright was a handicap in escaping predators, there were substantial compensations.
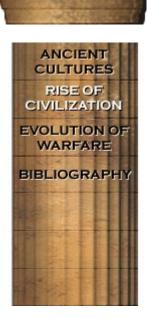
The raised head allowed a greater range of vision. A larger larynx could be accommodated, allowing the development of speech. Speech, in turn, led to rational thought, a larger brain, and the development of culture. The hands were free for carrying weapons and other objects. This may have led to the opposable thumb, which allowed a precision grip rather than the power grip of the apes. The precision grip increased dexterity and was crucial to human cultural development. Thereafter, the brain, the hand, and the eye evolved somewhat together.

Natural selection favored the ability to think, reason, and anticipate events and actions, the primary advantage of humans over other species today.

Human expansion

Hominids spread from Africa into the neighboring continents of Europe and Asia. From these African roots different human species evolved, although only Homo sapiens has apparently survived to the present. Humans spread eventually across oceans to Australia perhaps 60,000 years ago and by land bridge probably to the Americas perhaps as early as 40,000 years ago.

Technology: The development and use of tools

The first archaeological evidence of human culture is stone tools. The oldest discovered so far date back 2.5 million years and initiate the period called the Old Stone Age (Paleolithic). This period covers 99 percent of the cultural record of human activity in terms of time. Everything from the New Stone Age (Neolithic), 30,000 years ago, through the Iron Age (3000 years ago) and up to modern history takes place in the remaining 1 percent.

Although the oldest surviving tools are made of stone, it is possible that tools of organic materials were in use earlier and have not survived. Animal bones, feather quills, claws, and objects of wood or fiber could have all been used as tools before stone.

The importance of technology

The first tools represent the beginnings of technology—the application of science and the use of objects for practical purposes. The employment of technology has several important implications. It can mean increased productivity and reduced costs. For example, a forager with a hide sack can carry many more nuts than ancestor could in two hands. The worker with the sack is more productive and can carry a given amount at a reduced cost in time. Technology creates new products and services. The first stone tools may have allowed humans to butcher fresh kills instead of searching for carrion. Hides from fresh kills could be converted into clothes, whereas rotten hides from carrion were useless.

Weapons are technology. They might be the difference between survival and extinction for an individual, a tribe, or a culture. Human predecessors were clearly advanced and competing well before they developed the first tools, but the growing technological sophistication of humans has been the means of our dominance over all other species, at least so far.

Technological change

At the cusp of the twentieth century, we are adapted to rapid technological change. We expect it, embrace it, and are rarely awed by it. At the other end of the geologic spectrum of human experience, technological change was numbingly slow. If the hominids broke from the family of apes even 6 million years ago, then 3.5 million years may have passed after that event before our predecessors first made stone tools. Another 1 million years passed before evidence indicates that they could control fire. Compare those periods to the amount of technological

change that has occurred in the last century.

The pace of technological change has gradually accelerated over time, although there have been periods of relative quickness and slowness, or even decline, and a few junctures where the rate of acceleration shifted into a higher gear. There have been at least two dark ages in the West when technology and knowledge declined or was lost—the first beginning around 1200 BC and the second around 400 AD. The destruction of the great library in Alexandria in 391 AD by religious zealots may alone have set back our knowledge by several hundred years.

The pace of technological change has been determined by several factors, including the size of the human population, environmental conditions, and the ability to preserve and pass on knowledge. When the world population of humans was very small, the spread of knowledge must have been limited. New ideas could have been invented and lost many times. Changing environmental conditions required a reasoned response to the problems of finding food, clothing, and shelter. The evidence of archaeology suggests that the peak of the last ice age, for example, was a period of rapid relative technological change. The people of that time needed better solutions for problems to survive in the harsh climate.

For most of the human experience, all knowledge had to be preserved in the brain and passed on orally. Only so much knowledge could be retained and passed on in this manner. Succeeding generations could build only on what was passed on to them by memory. The creation of writing was one of those junctures after which the increase of knowledge was permanently and rapidly accelerated. Writing greatly expanded the preservation, spread, and pass-through of information. Computers have increased the rate of acceleration in a similar manner.

The evolution of tools

The earliest preserved human tools are fine-grained stones that have been struck apart to create sharp edges. These edges can cut other useful materials like wood, meat, and bone. Stone edges are very sharp, but are not flexible and break easily. They are easy to replace, however. Flint is the best-known Stone Age raw material, but it is rare in many parts of the world. Also used were fine-grained lavas, volcanic glass (obsidian), quartz, and chert. Stone tools were made by striking stones, not chipping them.

Subsequent advances in tool making were the development of tool making tools, fine flaking to shape tools for specific uses, the development of micro-liths (literally small stone blades struck off a stone core to make knives, dart points, and arrowheads; the use of micro-liths distinguishes the New Stone Age [Neolithic period]), and the eventual development of metallurgy.
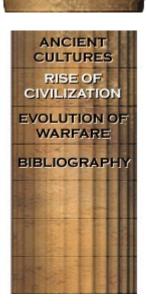
Metal tools were first made from raw copper, found on the Earth's surface and hammered into useful or artistic shapes. The important step of smelting copper from ore probably took place in Asia Minor between 6000 and 4000 BC. This required the invention of bellows to raise fire temperatures sufficiently high to extract the metal. The molten metal was then cast and shaped with hammers. Copper tools were relatively weak and soft, however, and were replaced by bronze, a much stronger and harder alloy of copper.

Some copper ores also contain arsenic. When smelted together, the result was the bronze alloy of copper and arsenic. Arsenic was dangerous to work with, however. Further experimentation resulted in a superior bronze alloy of copper and tin. Bronze tools first supplanted the micro-liths and relatively rare copper tools around the Eastern Mediterranean. The Bronze Age supplanted the New Stone Age and lasted for several thousand years. Bronze and tin became the first strategic resources. Cultures without access to bronze and tin were at an industrial and military disadvantage. Some researchers believe that Mediterranean mariners sailed as far as the Great Lakes of North America in search of copper. The Phoenicians and Carthaginians grew in importance by controlling the trade of tin from Britain.
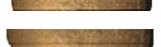
Bronze was supplanted by iron as a material for tools and weapons around 900 BC. Iron was stronger and harder than bronze, it could hold a sharp edge much longer, and it was much easier to find. It remained unsurpassed for tools and weapons until the much more recent development of steel.

Gold is the softest naturally occurring metal. It was probably worked and shaped long before copper, and experience with gold may have suggested what could be done with raw copper. Gold was of no use as a tool but was perfect for jewelry and objects of art. The relative rarity, beauty, and softness of both gold and silver made them ideal luxury items and natural choices for coins when the need for money arose.

The prehistoric human community

The earliest humans are thought to have lived in small family units, much like the apes. On the plains of Africa, or at the margin of the plains and the forest, they gradually evolved physically and mentally so that they could successfully compete for food and shelter. Their superior capability allowed them to spread outward from Africa into a wide variety of climates and environments.

Gatherers and hunters

The first hominids are believed to have been gatherers of plant foods and the occasional animal carcass. Although they were probably not capable of sophisticated hunting at first, the ability to eat both meat and plant food was an important survival strategy. Meat was especially important as a source of fat, available otherwise from only a few plant and nut foods. Fish of all types were important sources of protein and fat for those people living near water.

Human predecessors eventually learned the technologies of fire and hunting, and became hunter-gatherers. The ability to hunt living animals brought important advantages. Fresh meat was safer to eat than rotten meat. The fur and hides could be preserved from a fresh kill to provide clothes. Warm clothes allowed the early humans to penetrate into colder climates. Raw fresh meat is difficult to consume, however. Fresh meat was tenderized by fire and could be preserved by smoking for later consumption. Fire also allowed the environment to be controlled to some extent. For example, early explorers of North America commented on how the Iroquois regularly burned the forests to clear land for farming or create more food productive meadows.

Nomads

Hunter-gatherers were probably not unsettled wanderers taking what came their way. Their existence and survival depended on systematically exploiting the resources around them according to what has been called an optimal foraging strategy. They moved to the seashore to harvest oysters in season, near the nut trees in the fall, and elsewhere to be present when fruits were ripe. They may have followed certain herds or arranged to intercept migrating mammals, birds, and fish at the same place each year.
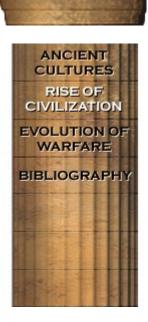
Plant foods make up 70 percent or more of the diet of present-day hunter-gatherers, but most of these live in very marginal areas. Prehistoric humans would have lived on the most productive lands and plant foods may have been even more predominant in the distant past.

A critical condition of the hunting and gathering lifestyle was uncertainty. The small living groups had to be flexible in where they lived, how quickly they could move, what they ate, and population size because their food sources were not dependable. Interaction with other groups would have been limited because each would have required a large territory for gathering. In the short term, droughts, fires, floods, bad winters, and other environmental conditions could turn a rich food area into a food desert very quickly. In the long term, ice ages made part of the world uninhabitable and much of the rest only marginally productive.

There were periods of bounty, no doubt, and some leisure time for social activity. There was time for making beautiful objects, as well as the necessary tools, weapons, and clothes. Cave paintings and artifacts suggest the beginnings of art and religion.

The slow gradual process of human evolution and technology advance brought our human ancestors safe to the end of the last ice age 10,000 years ago. As the ice receded, the land reentered a cycle of gradually increasing plant and wildlife abundance. Humans by this point had spread around the world and were sufficiently advanced to begin dominating instead of just surviving. One by one large animals like the mammoth and giant bison went extinct, handicapped partially by loss of habitat and perhaps decisively by human hunters with increasingly efficient weapons.

In this time of abundance, prehistoric humans made the single greatest technological leap of our species—the agricultural revolution.

The agricultural revolution

The conversion of our predecessors from hunter-gatherers to herder-farmers circa 8000 BC is the great dichotomy of the human experience. From that point on, the dominance of our species, at least to the present, was assured. The growing of food crops and the domestication of food producing animals changed human activity overnight, in geologic terms. It is important to note, however, that this revolution took many thousands of years to unfold and never reached large parts of the world.

The importance of agriculture

Agriculture removed much of the uncertainty in obtaining food. People no longer had to search it out over large areas—they found places where it could be produced in abundant quantities year after year and fixed themselves there. Instead of relying on the environment's natural bounty, they could direct and manipulate the provision of that bounty. Abundant and dependable food supplies allowed population to grow and set the stage for the rise of civilization.

The human population on Earth two million years ago has been estimated at 100,000. At the beginning of the agricultural revolution this number had risen to perhaps five million, thanks to better adaptation, technology, and abundant resources that became available as the ice sheets receded. By 3000 BC, the time of the first Egyptian dynasty, world population had increased to approximately 100 million. By the birth of Christ, world population was well over 200 million.

The beginnings of agriculture

Agriculture was a gradual discovery. It is believed that early gatherers first learned the relationship between plants, the foods they produced, and their growing cycle. At some point the gatherers learned how to encourage the plants they depended on and inhibit those of no use. Then came the steps of gathering seeds, planting seeds, and nurturing the plants. By selecting seeds from the strongest and most productive plants for replanting, the early planters interrupted and redirected the process of natural selection to improve the yield of the useful plants. For example, researchers in Mexico have found evidence of the ancient corn plant with only a few kernels that became the much more productive corn plant of ancient America through selection over many thousands of years.

The first domesticated grain is believed to have been a wild wheat that grew in southern Turkey. To domesticate this plant, the early gatherers had to learn how to harvest the grain seeds, extract the wheat kernel,

grind it, and bake it, all before they learned how to grow the plant and select it so that it increased in kernel size. This was a complicated learning process that took time. Less is known about how and when the rice plant was domesticated, but it was clearly as important in Asia as wheat was in the Middle East and corn in America.

The agricultural revolution accelerated as innovations increased arable land, crop yields, and farmer productivity. Land was cleared by grazing or fire. Soil was prepared by digging first, and then plowing. Irrigation insured adequate water. Fertilization and crop rotation increased yields. Specific tools like the sickle, scythe, plow, and hoe increased farmer efficiency.

Domestication of animals

Dogs were domesticated from wolves perhaps 15,000 years ago in both America and the Near East, but dogs were useful mainly as companions, guards, and hunting aids. The first domesticated food producing animal was probably the goat, a source of meat, milk, and waterproof hides. This breakthrough occurred in the hills of modern Iraq. Domestication of the goat was followed by sheep (meat and wool), cattle (meat, milk, hides, power), horses (meat, milk, transport), pigs (meat and fat), chickens (meat and eggs), and others.

Cattle are considered the most significant domestication. In addition to providing meat, milk, and hides, they were also valuable as beasts of burden. They pulled wagons, greatly improving land transport. They pulled plows, greatly improving agriculture. The existence of domesticated cattle is thought to have been primarily responsible for the doubling of population in the Near East between 4000 and 5000 BC.
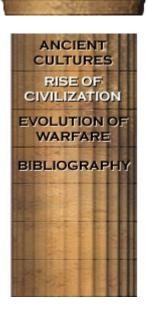
The process of domestication must have been to obtain young animals, raise them in captivity over enough generations so that they grew less wild and more tolerant of being managed. It is unclear why some animals could be domesticated but not others. Why the cow but not the buffalo? Predators would be unlikely choices for domestication, but the wolf was a predator and so was the cat, which was domesticated much later.

Domestication of animals brought many important advantages. They were dependable sources of meat. Cattle and goats converted grass, of little use to humans, into milk and milk products like cheese. Vast grasslands that could previously support only a few hunters could now support much larger populations of herders. Sheep and vicunas produced wool each year. Animals could graze on broken lands of little use for farming.
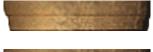
Horses, oxen, llamas, and other animals provided power for pulling, plowing, and carrying. Military uses were eventually found for onagers, asses, and horses, and to some extent, elephants, although elephants are not considered domesticated. The horse was domesticated first in the north Asian steppes and its use spread from there, probably in the wake of Asian migrations to the south and west. Paleontologists believe the horse evolved in the Americas actually, but went extinct there, perhaps due to hunting pressure.
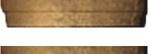
Mounted Asian barbarians are thought to have overrun the first towns rising in Asia Minor and the Middle East around 6000 BC. The people that were overrun may not have seen a domestic horse previously, much less one on which a warrior could ride.

The first cities

The agricultural revolution made possible the first towns and cities. Dependable local food supplies allowed permanent settlement and these settlements grew. People built permanent homes, permanent structures for the production and storage of food, and an entirely new infrastructure of civic institutions such as courts, religious centers, and marketplaces as the need for these arose.

The economic advantages of cities

The rise of the town led to a further specialization of labor. Some of the town residents continued to specialize in producing food as farmers or herdsmen, but a smaller percentage of the total population was required for this work than in a hunting and gathering society. The remaining townspeople were free to concentrate on becoming experts at other tasks such as masonry, carpentry, wool making, pottery making, tool making, and so on. An expert potter made quality pots and jars for the entire village and bartered them for food and other services. This was better for the village than having each family make their own. The expert produced items of better quality and at a faster pace than non-experts. As individuals divided up the tasks and specialized, the total village production of food, pots, clothes, and other goods was much larger than if each family had tried to provide its own needs.

Abundant food and the economies of production from specialization increased leisure time. It was no longer necessary that the majority of waking hours be spent obtaining the basics of life. Leisure time was available for entertainment, music, dancing, art, and other pursuits. Clothes, homes, and other goods could be decorated and made stylish, not just functional. The quality of life improved.

The new challenges of cities

Towns created new problems to be solved, however. Concentrated populations required new rules of behavior and the beginnings of government to administer the rules. Organized religions helped to govern behavior and unify the multifamily groups now living together so closely. Permanent residences required new standards of sanitation, safe sources of water, common areas, medical care, and, eventually, preparations for defense.

The dense populations of towns increased the incidence of disease and epidemics. Measles, mumps, smallpox, and influenza spread easily through new towns. These diseases are thought to be evolved versions of diseases that originally afflicted animals 6000 to 8000 years ago.

Irrigation incidentally spread the mosquito and the diseases it carried.

The northern Iraq settlement of Jarmo, dated by archaeology to 7000 BC, had a population of about 150. Jericho in Palestine and the Turkish town of Catal Huyuk each had about 2000 inhabitants less than a thousand year later. By nearly 2000 BC the city of Ur had perhaps 100,000 inhabitants. The populations of both Egypt and Babylon at this time were around five million. Greece had a population of about two million in 500 BC. By the first century AD the population of Rome alone was one million. By comparison, Asian cultures were much larger. The population of India in 300 BC has been estimated at 30 to 40 million. By the birth of Christ China may have contained 50 to 60 million people.
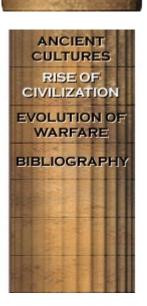
The beginnings of government

The earliest human societies may have been matriarchal, giving precedence to women because of their critical role in bearing and rearing children—so important to the survival of the small primitive hunter-gatherer groups. At some point, the prominence of women switched to a hierarchy of male dominance. Some believe that a wave of barbarians from Asia, perhaps 6000 years ago, were instrumental in this change. The invading warrior society placed its priority on strength and power, setting the tone for all following human society.

Male-dominated hierarchies were ruled by the "strongman." Strongmen evolved later into kings and emperors. Within the new city societies, the strongman was at the top. He ruled as his contribution to the group, served by the first bureaucracies of clerks and other officials who managed the organization of the city.

Important roles of early governments were to store food surpluses and protect them from outsiders. In the early cultures of the arid Middle East, governments built and maintained the irrigation systems that made the farms possible. These were large and complex systems that required planning and organization on an unprecedented scale.

Trade

Stone Age peoples traded raw materials and exotic goods many thousands of years before the agricultural revolution.

The beginnings of trade

Stone tools have been found great distances from the sources of the stone from which they are made. Amber, oyster shells, copper, turquoise, malachite, and dyes used in cosmetics have also been found at pre-historic sites substantially distant from their sources. Although the foraging bands of this period were largely self-sufficient, individual groups may have had easy access to some uncommon item that might have been desired by others. The favored group could gather such an item, for example, chert stone blanks, seashore shells, or bear claws, and trade them to other groups for items that the first group desired, but to which it had no easy access. The copper in ornaments found in the native settlements of Florida, for example, originated in Michigan and Minnesota.

The scattered foraging groups within a large region may have come together regularly, perhaps during the bountiful summer or fall seasons, to celebrate, select mates, and trade. Such gatherings would also have been a likely time for new technologies to be shared.

Trade and towns

Trade increased in importance after the first towns appeared. Within the town the different task specialists had to trade the results of their work for the things they needed. The increasing importance of task specialization required a more sophisticated arrangement of bartering so the residents could trade the results of their labor for the necessities and luxuries they desired.

Trade also flourished between towns. When two different towns each had access to something the other did not have but wanted, there was an obvious basis for trading. Even when both could obtain or produce the same items, there might have been a benefit from trading. Each might have specialized in the production of a particular good or food item, traded with each other, and ended up with more of both items than they would if they had tried to meet their needs separately. This comparative advantage from trading might arise because one town had better farmland and the other better grazing land. Or one might have had easier access to metallic ores while the other was surrounded by rich bottom land.
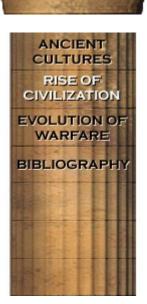
Within towns the specialization of tasks and the prospect of profit

increased the rate of technological improvement. The expert had an incentive to find ways to be more productive. Greater productivity either made him materially better off or allowed for greater leisure time.

Trade between towns also helped increase the rate of technological change by expanding markets and bringing different cultures into contact. Distant markets further encouraged specialists to find better ways to make things. Trading between towns and regions helped spread new technologies more quickly and more widely, reducing the chance that an important innovation might be temporarily lost.

The demands of business and trade eventually led to the development of money that served as a medium of exchange, a storehouse of value, and a standard of value. Silver rings or bars are thought to have been used as money in ancient Iraq before 2000 BC. The first coins were made of electrum, a naturally occurring and easily malleable alloy of gold and silver.

Religion

The marvelous human ability to think made it possible for our ancient predecessors to first ponder such discomfiting questions as where do we come from, what is out past the stars, what controls the sun and the moon, what happens when we die, and so on. Religion evolved from the first attempts to provide acceptable answers to questions like these, however implausible or supernatural, because science and logic as they existed then (and today in many cases) could not. Living at a time when life was probably short and demanding, where so little was understood, and where critical events could not be predicted or controlled, it was natural to accept the existence of a guiding spirit or deity at work. It was an easy following step to believe that spirits, ancestors, or deities could be influenced or petitioned.

Early religion

The oldest evidence of these beliefs is ceremonial burials. The dead are adorned for their transformation from the living to some other place and are often buried with goods that may be of use on the other side. There is evidence that the Neanderthals employed ceremonial burials. Cave paintings, clay figurines, and carvings of animals and possible deities hint at the religious beliefs and worship of the ancient hunters and gatherers. Worship and sacrifice were intended to insure good hunting, good gathering, good fishing, good health, and long life.
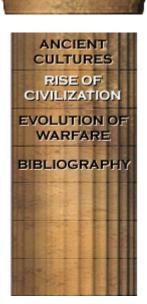
Following the agricultural revolution, worshipping the sun became predominant for the new farmers. The animal spirits and Earth goddess slipped in importance because food plants were the principal food supply and it was understood that the sun was critical to crops. Astronomers learned to follow the movements of the sun so they could mark the times of planting and harvest.

Urban religion

The increasing complexity of urban life was mirrored in many cultures by an increasingly complex religion. Some cultures worshipped a host of gods, each responsible for some part of the natural world. There might be a sea god and forest god, for example. Within such a host of gods, it was common for a hierarchy to exist with one supreme god over all. Other cultures rejected the polytheism of multiple gods, believing instead that one god or spirit controlled the universe.

Religion had important functions in the first towns and cultures, beyond calming anxieties about the unknown. It helped bind the growing population of a community together with common beliefs and rituals that

established an identity for everyone. It also worked together with government in establishing and enforcing rules for social behavior. The local ruler and the local priest reinforced each other when both prohibited unacceptable acts such as murder and theft within the community. These rules of behavior did not usually apply outside the community, unfortunately. Most of the war and mayhem of history was conducted on behalf of earthly rulers and heavenly gods.

Boats and sea travel

The earliest archeological evidence of rafts and water craft comes from the upper Nile in Egypt and dates from about 4000 BC. This evidence is primarily pictures on pottery fragments and on walls within ancient tombs. Prior to 4000 BC, there is no direct evidence of human water travel.

Indirect evidence, however, indicates that humans traveled the seas long before the dates suggested by archeology. For example, fossils reveal that humans first appeared on the continent of Australia some 60,000 years ago. We presume today that the earliest Australians migrated by sea from Southeast Asia using rafts or canoes. In another example, stone tools excavated from an Aegean Sea village site were made of obsidian that was traced to a volcanic island 80 miles off the coast. These tools date from 11,000 BC.

The first boats

The design of the earliest boats is open to debate. They could have been dugout canoes, bark canoes, or animal skin boats. Dugouts were made from a single log. A large hollow area was burned and carved out of a tree trunk, permitting a passenger to be seated. Planks added to the sides to keep out water may have been the inspiration for plank construction. Wooden outriggers added to the right or left side of canoes were a later innovation that helped prevent capsizing. Animal skins were also used in early forms of boats. Sewn hides were stretched over a wooden frame, sewn together, and sealed with pitch. Such a boat was light and easy to carry. Surviving Assyrian relief carvings from 700 BC show skin-covered boats being used to transport chariots across the Euphrates River.

Many early boat innovations originated in Egypt. The Nile flowed north but the prevailing winds blew south. The wide and peaceful Nile was thus a natural water highway, encouraging the use of boats. The Egyptians are credited with inventing sails. They used first plants or leafy branches to catch the wind. By 3500 BC they were employing a square sail, probably woven of reeds and set on a single vertical mast placed in the bow. Between 2200 BC and 1900 BC the position of the mast migrated from the bow to amidships. This made it possible to drive the boat forward using crosswinds, not just tailwinds. The need to transport large stone blocks down river for monument building may have spurred the conversion from reed boats to wooden plank hulls.

The transition from the paddle to the oar took place in Egypt around 2500 BC. The oar had several advantages over the paddle and permitted both the size and speed of vessels to increase. The oar was secured to

the boat, giving the oarsman more leverage. It also permitted multiple rowers to be placed side-by-side manning a single oar, although this innovation was not adopted until centuries later. The deck of the traditional paddle boat needed to be low to the waterline so the paddles could reach the water. This restriction had limited the overall size, height, and displacement of boats of that time. Long oars made larger boats possible.

Oversized oars dipped into the water near the rear of the boat were used to steer. This early rudder was first simply held by the helmsman and not connected to the boat. Large vessels of the time had as many as five steering oars.

Ship construction

Exploration of more than 30 ancient wrecks found around the Mediterranean revealed that the ancient ship builders started from the outside and built in, rather than starting from the inside and building out, as is done today. Rather than build a frame and then add planking, the ancients built a frame first and stiffened it with inside supports. Mortises (wide holes) were drilled into the edges of hull planks and a wooden tenon (plug) was inserted into the mortises of two adjacent planks. The tenon was half inside each plank and held in place by wooden dowels that went through the planks and tenons. Swelling of the planks, dowels, and tenons sealed the joints without need for caulking. The frame was then stiffened with cross bracing and decks.

The oldest sailing ship of mortise and tenon construction is a wreck from 1350 BC found off the coast of Asia Minor. The earliest record of sailing ships is a tomb painting from Thebes dating to 1400 BC. This painting shows merchant sailing ships from the Levant arriving in Egypt. The ships are being unloaded down gangplanks from the ship to the beach.

Merchant ships

Greek and Phoenician sea trading blossomed in the Eastern Mediterranean starting around 900 BC. Both groups established colonies around the Mediterranean and built trading empires. The Phoenicians were perhaps the finest sailors of antiquity, certainly ranging as far as Britain for the crucial metal tin. There is some evidence that Phoenicians circumnavigated Africa and perhaps reached the Americas.
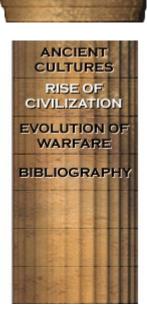
Phoenician ships had hulls of a broad beam and were rounded at both stem and stern. They usually carried a carved horse's head on the prow. Greek writers called these ships "tubs" for their shape or "horses" because of their figurehead.

The early sails had a boom across the bottom, as used by the Egyptians on the relatively peaceful Nile. By the sixth century, the broad, loose-footed square sail was in general use on the open sea, where it was more practical. The evidence of an Etruscan tomb painting from Tarquinia, Italy, circa early fifth century BC, shows merchant ships were using two masts and a foresail by that time.

By at least the fifth century BC, merchant ships of 400 ton capacity were carrying the large bulk cargoes in the Mediterranean. Modern

merchant ships larger than this were not built until the nineteenth century AD. The most important bulk cargoes at this time were grain, wine, and olive oil.

The largest known merchant ship of ancient times was built for Hiero II, king of Syracuse 270-215 BC, to carry grain from Egypt. It carried three masts and required a bilge pump designed by the famous ancient engineer Archimedes. The cargo on its maiden voyage included 60,000 measures of grain, 10,000 jars of preserved Sicilian fish, 20,000 talents of wood, and 20,000 talents of miscellaneous goods. This cargo weighed 2000 tons by modern estimates. In the event that the king wished to accompany a voyage, the ship was also equipped with luxury accommodations, including cabins with mosaic floors, promenades decorated with plants, a gymnasium, a bath room fitted with copper tubs and marble basins, a library, and a chapel to Aphrodite.

The rise of civilization

Civilizations rose and fell time and again, in different places at different times, some lasting much longer than others. There were at least two great dark ages during which civilization essentially disappeared from most of the world (1200 BC to 700 BC and 400 AD to 900 AD). The two prerequisites for civilization were the human ability to organize and the production of food in large quantities. Large amounts of food made large populations possible, but only if they could be effectively organized.

In the space of 5000 years, from 8000 BC to 3000 BC, the earliest settled villages grew into full civilizations in the Middle East, Anatolia, Iran, India and Pakistan, and China. Among the important steps in the movement toward civilization were irrigation, the city-state, trade, metalworking, and writing.

Irrigation

It is not accident that the cradles of civilization were river valleys—the Nile, Tigris, Euphrates, Indus, and Yellow. The land around these rivers must have been recognized as being rich, but the source of their richness was new soil deposited each year when the rivers flooded. The valleys were not useful to the earliest farmers until they learned to control flooding or adapt to it. The rise of civilization was partly the story of learning to control these rivers and realizing the potential of the land.

More is known about the history of the Tigris, Euphrates, and Nile civilizations than others because these areas have been extensively excavated. These three rivers carry water from highlands far inland to the sea, passing through very arid regions. The contrast between the land adjacent to the river and that a short distance away is striking. Desert can exist only a few hundred yards from the Nile. The land around the rivers is rich, but making it bloom required the transfer of water to those parts of the valley not adjacent to the river.

The construction of large-scale irrigation projects required a large communal effort and organization. The fact that the irrigation was accomplished is proof that governments and organization were in place, although it was accomplished before writing appears. Once irrigation was understood and in place, food production soared along the rivers, making these valleys the richest and most populous places on Earth.

The relative riches of the area made possible specialization of labor, leisure time, the development of the arts, and the necessity of defense.

The City-state

The Tigris and Euphrates Rivers of the Fertile Crescent flood in the summer, during the growing season. For the land in this area to be cultivated, the rivers had to be held in check by dikes and canals. Nothing came easy in Mesopotamia. There were few natural resources other than farmland. The building material was mud. To be successful, the people living there had to be resourceful. It is no accident that many of the great technological innovations of the era, such as invention of the wheel, occurred here. From 5000 BC to 3000 BC the plains through which these two rivers flowed became covered with settlements. Larger settlements in the area were separated first physically by the shifting of the rivers and areas of marshland and then politically.

By 3500 BC the people at the mouth of the river, the Sumerians, had achieved the first full civilization. Their major city was Ur, situated on a lagoon of the Persian Gulf where it supplemented its farming by operating as a trading post for both sea and river traffic. Royal burials from Ur, dated to 2600 BC, revealed remarkable treasures, including bowls of gold inscribed with the prince's name, an elaborate helmet beaten from a sheet of gold, axes of electrum and a dagger of gold (weapons for decorative purposes only), and many more bowls of gold, silver, and copper. Some of the royal tombs included large supplementary burials of assistants and retainers apparently included to help the deceased in an afterlife. These tombs were evidence of prominent social status.

The first Sumerian king who stands out in history is Ur-Nammu, who built the great ziggurat of Ur. This enormous mud brick structure was restored by later kings in the area over the years and still exists. Massive walls were built to defend Ur, but these were torn down by the Elamites who captured the city around 2000 BC.

The city-state was the typical political organization in the Middle East and Eastern Mediterranean until almost the end of antiquity. They were often collected into an empire, but these rarely held together for long until the Romans appeared. Egypt was the major exception to the city-state, but its isolated situation made it unique.

Trade

Trade on a large scale was financed by agricultural surpluses that became available especially after the river valleys were irrigated and organized. The trade of surpluses greatly encouraged the specialization of crafts. People near important raw materials could concentrate on a craft and trade the result of their labor for food from the river valleys. People in the mountains around Ur traded metal tools and ore for food, for example. The placement of the first civilizations on rivers and coasts accelerated trade because transport by boat was cheap. Pottery could be shipped by boat over long distances. The cedar of Lebanon could be shipped by sea to Egypt, where timber was in short supply.

Trade was an economic multiplier. The comparative advantages of production in different areas meant that all participants were better off after trading.

Trade was also an important disseminator of ideas. Visitors to other cultures spread new ideas and innovations quickly. Those cultures that actively traded were usually among the most advanced.

Metalworking

The earliest use of metal yet known comes from southern Turkey, north of Syria. Hammered copper objects found here date to 7000 BC. Prolonged hammering causes metal to eventually harden and become brittle, leaving it useless. The process of annealing, heating the metal in a fire, restores its malleability, making it useful again. The process of annealing seems to have been discovered very early.

The first important breakthrough in metallurgy was the discovery of smelting, the process of extracting metals from ore under high temperatures. This greatly expanded the use of copper because ore was much more common than raw copper that could be hammered. By 4000 BC small, simple copper objects were widespread in the Middle East.

The second important breakthrough in metallurgy was the discovery of bronze around 3000 BC. This copper and tin alloy was harder than copper and more useful for tools, and it also flowed more easily when molten than copper did and was easier to cast.

Metalworking in Thailand goes back to 4000 BC and bronze appears there before 2000 BC. Metal working appeared in the Andes of South America around 2000 BC. This development is considered to be independent of metalworking in the Middle East.

Iron was known from the third millennium BC, but it was not mastered until many years later. Some of the earliest iron artifacts were made from meteoric iron. Ancient trading records show that iron was more valuable than silver during much of the second millennium. One of two ceremonial daggers placed in Tutankhamen's tomb in 1323 BC is made of iron (the second is gold). The use of iron spread after 1200 BC during the first dark age, in part perhaps because the breakdown of trade limited supplies of copper and tin. Without those critical metals, smiths made do with the more common iron ore, learned how to make it well, and ended up with a more useful and cheaper metal for their trouble.

Writing

It appears that writing was invented to keep accounts in trade and for the early city-states.

The invention of writing took place in Mesopotamia just before the start of the Bronze Age in 3000 BC. The earliest writing was pictographic—each picture represented an object. For example, a drawing of a horse's head represented a horse. The common writing material in Mesopotamia was a clay tablet. The preservation of large numbers of tablets allowed historians to trace the transformation of the early pictographs into cuneiform. In this system, the pictographs were gradually stylized into clusters of wedges pressed into the clay by a writing instrument called a stylus. Because clay tablets were much more likely to be preserved than more perishable media, we generally know more about those cultures that wrote in cuneiform.
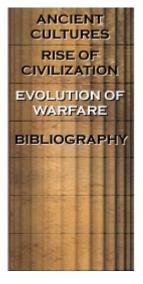
Writing in several forms appeared in Egypt very quickly after 3000 BC, probably influenced in function by developments in Mesopotamia. The most famous Egyptian writing was hieroglyphics, another pictograph writing especially used for temples carvings. Cursive hieroglyphics were

easier to write and were used on papyrus documents and in everyday use.

An important step in writing flexibility was the invention of an alphabet where letter symbols represented mouth sounds, not objects. A combination of sounds created words. The earliest alphabetic system appeared in the city of Ugarit in modern Syria around 1350 BC. Ugarit was an important trading center between Mesopotamia, Palestine, Anatolia, and the ports on the Levant leading to Greece and Egypt. The best-known script from this time is called Ugaritic, which has a 32-letter alphabet and is probably the ancestor of all later alphabetic scripts.

Evolution of warfare

Megiddo
Prehistoric warfare
The first armies
The evolution of battlefield tactics
Siege warfare
Naval warfare

Megiddo

The Egyptian Pharaoh Thutmose III commemorated his victory at the Battle of Megiddo with an inscription and pictorial reliefs at Karnak. The battle took place in the twenty-second year of his reign, around 1460 BC. There were many other battles preceding Megiddo, no doubt, but it was the first for which any account exists, making it the first battle recorded in history. Reviewing what is known about the battle and considering its implications offers an introduction to the state of warfare at the time and the evolution of warfare to that point.

The battle

Thutmose led his army out of Egypt into what is now Israel to establish (or reestablish) control over the Levant. In opposition were several Canaanite kingdoms under the leadership of the king of Kadesh.

When the pharaoh's army learned that the Canaanites were massed near Megiddo, aides urged caution, lest they be attacked while deployed in column along the road of approach. Thutmose ignored their advice and put himself at the head of the advancing column. Once in the Qina Valley, the army was deployed across its breadth. The pharaoh paused, however, delaying the attack against Megiddo until the next day.

At dawn the pharaoh deployed his battle line of chariots in the valley, with his own in the center. Historians estimate he had at least 1000 chariots, which could have extended two miles if deployed in a single rank. It is presumed that the Canaanites charged out with their own chariots but nothing is known of the engagement. The inscriptions report that the Canaanite army broke and fled back to Megiddo. Chariot crews were lifted back into the city over the walls by ropes after the city gates were shut. Thutmose built a fort outside the city and besieged the town.

Megiddo surrendered after seven months of starvation. The military booty from the battle and siege was over 350 living prisoners, 900 chariots (two partially made of gold), two fine suits of bronze mail armor belonging to leaders, 200 leather coats of armor, over 2000 horses, and 502 bows.
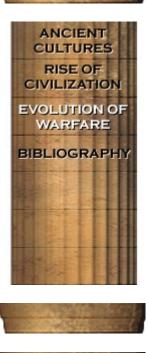
Implications

The Egyptians were able to march an army very quickly into hostile territory (150 miles from the Nile delta border to Gaza in 9 days) and keep themselves supplied throughout a seven-month siege. This implies a sophisticated system of supply, supplemented probably by local sources. The army consisted of an estimated 1000 chariots (2000 horses

minimum) and a contingent of infantry that must have carried out the siege. The existence of so many chariots would require an advanced industry for making them, plus a system for obtaining and training horses. The deployment and attack of chariots required training in battlefield maneuvers. The battle itself was a chariot engagement. All of the captured war booty is chariot equipment.

The chariots were probably used as mobile platforms for composite bow archers. The composite bow was more powerful than the simple bow but much more difficult to construct. Use of the composite bow was an additional indication of an advanced weapons manufacturing capability.

It is clear from the pharaoh's accounts that military affairs had advanced significantly by the time of this first recorded battle. We see already evidence of logistics, leadership, strategy, battle tactics, the military/industrial complex, and weapons technology.

Prehistoric warfare

The absolute beginnings of war are lost in the past. We can make some assessments of how war evolved, however, by considering the behavior of less advanced societies that survived into historic times and by studying the archaeological record.

First warfare

We can guess that the small hunting and gathering groups that weathered the last ice age had cause on occasion to attack each other. Such attacks were probably for control of food sources, important raw materials (tool stone), water, trade routes, or perhaps locations of presumed religious significance. Prehistoric hunters equipped themselves with weapons to make their living. It was an easy step to turn those weapons on neighbors if the stakes to be won were sufficiently high.

It is possible that war and raids of this type were not common as the ice age ended because population densities were relatively low and human life was no doubt highly valued. But the increasing relative natural bounty and advances in technology made it possible for populations to grow. Some living areas were clearly better than others and more desirable. At some point the competition between groups became armed conflict.

In the 1960's, a burial site was discovered along the Nile in ancient Nubia that provided what may be the earliest skeletal evidence for prehistoric warfare. The site dated to between 12,000 to 4500 BC and included the remains of 59 people, including women and children. Forty percent of the skeletons were found buried with small flake points, thought to be arrowheads. Points were found embedded in the bones of four skeletons. Several individuals appear to have been executed, perhaps after already suffering other wounds. Seven skeletons had arms fractured in a manner consistent with warding off blows.

Increased economic incentives for war

Competition and incentive for armed conflict between groups grew once the agricultural revolution began. By 6000 BC, good agricultural or grazing land must have increased significantly in value where the new food gathering activities were taking hold. The food disparity widened between the newly rising agricultural towns and the marginal communities in the hills or on quickly exhausted lands. Stockpiles of grain and animal herds owned by the first towns were a powerful attraction to the more primitive tribal groups. As the towns grew richer in goods through specialization of labor, their attraction as targets only

increased.

When European explorers encountered the less advanced peoples of Africa and the Americas they made note of the occasional raiding attacks that native tribes carried out against each other. These raids served several purposes. They might have been demonstrations of strength and intimidation that were partly diplomatic. They might have been simple raids to acquire slaves, food, goods, or other commodities. They might have been wars of extermination or conquest to take by force more desirable lands. We assume that war began in a similar manner in those parts of the world where ancient civilizations first arose.

Archaeological evidence supports the theory that warfare accompanied the earliest beginnings of civilization. The oldest towns sites yet excavated, such as Catal Huyuk in modern Turkey and Jericho in modern Israel, were fortified. Jericho was an excellent site near an easy crossing of the Jordan River. The people of these towns went to the expense of building walls or other fortifications to defend their food and other goods from neighbors less fortunate and more belligerent.

Both of these sites and other early towns show evidence of being sacked and destroyed. Levels of ash and crumbled masonry indicate a time when the buildings came down and were burned. In some cases, weapons and skeletons have been found intermingled within the ash layer. Long before written history begins, we have clear archaeological evidence of towns being attacked and destroyed.

New weapons

The archaeological record indicates that between 12,000 and 8—000 BC there was a revolution in weapons technology. During this period four new weapons first make their appearance-the bow, the sling, the dagger (short sword), and the mace. The bow and the sling were important for hunting, but the dagger and mace were most useful for fighting other humans. These four new weapons, together with the much older spear, were the principal weapons of all armies until around 1000 AD.

Missile weapons

The bow may be the oldest of the new weapons. In cave paintings, it is clearly shown being used against both animals and men. The simple bow and arrow had a range of around 100 yards, double that of the thrown spear. The bow was especially useful for ambush and deadly when many bows were fired in a barrage. A single archer could carry many more arrows than javelins.

The sling is usually given little respect today but it actually had greater range, accuracy, and power than the simple bow. It was an important long-range weapon during the Neolithic period and for some time after. Excavations at Catal Huyuk show no evidence of arrows, only slings. Elsewhere in Anatolia, at Hacilar, sling projectiles were made from baked clay. Slingers using manufactured projectiles could achieve a higher accuracy than those throwing odd-shaped stones. Large fist-shaped stones could break bones or smash skulls, even those protected by armor. Xenophon states in the *Anabasis* that the slingers from Rhodes in his 10,000-man army of mercenaries had better range and accuracy than the Persian archers that opposed them.

The mace and axe

The mace, one of the oldest weapons in humankind's armory can be traced directly down from the primitive wooden club. By the Neolithic period, the mace had been improved by the addition of a stone head to the club. Later, the stone head was replaced by a metal one. Early Egyptian reliefs show soldiers armed with maces as well as spears. Egyptian maces went through several designs, including a sharp edge that must have been intended to cut through leather or cloth helmets.

The development of leather armor made the mace less effective. One response to leather armor was the battle axe, a variation of the mace with a sharp cutting edge, made possible by the new technologies of copper and then bronze. Piercing axes had long blades (from edge to handle) and pointed edges. These could penetrate leather. Cutting axes has short blades but long cutting edges. They were most useful against opponents not wearing armor.

Axes and maces both declined in use as better swords became prevalent, especially after 1200 BC.
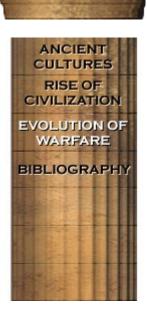
The sword

Swords evolved from knives and daggers. These had been made from stone blades for thousands of years and then from copper and bronze. Prior to 1200 BC, daggers were carried mostly as secondary weapons by skirmishers. The sickle sword, shaped like the familiar farm implement, was popular in the Near East and Egypt but appears to be a clearly inferior weapon. It was not particularly useful for stabbing and not strong enough for cutting off limbs.

Around 1200 BC the first important sword was brought to the Mediterranean region. Archaeologists classified it as the Naue Type II sword and by 1100 BC it was the only sword in use in the Aegean. By the early Iron Age it was the standard sword also in the Near East. This revolutionary sword was over two feet long and sharply pointed, but narrow and two-edged. It could be used for slashing or thrusting. A powerful swordsmen could sever limbs or a human head. The Naue II sword was developed in either what is now modern Austria or Hungary. The early examples of this sword were made of bronze but by 900 BC a superior version was being made of iron. It remained the standard sword in the Mediterranean and Near East until around 700 BC.

The Romans adopted a shorter sword that they encountered while fighting the Carthaginians in Spain in the third century. By the second century, the two-foot *gladius* was the standard close-range weapon of their legionary infantry.

The first armies

Almost nothing for certain is known about the organization and tactics of the first armies, and must continue to make educated guesses based on the limited information we have. The archaeological remains are important, including preserved weapons, accouterments, and fortifications. Also important are paintings, wall carvings, pottery decorations, and other artwork that have been preserved, although celebratory inscriptions and artwork often distort actual events in favor of the ruler being honored.

Ancient oral histories that survived to be recorded after the advent of writing are also helpful, such as the *Iliad* by Homer. Caution is required when consulting oral histories, however, because events of the past may be described in terms of the writer's culture, much like medieval religious paintings that dress Biblical characters in clothing of the Middle Ages. Actual documents concerning military supplies, war booty, and equipment have been found, but only after the invention of writing.

Militias

The first armies were probably militias of townspeople who took up arms in emergencies. At first hunting weapons were probably used, but soon the new weapons designed specifically for combat were manufactured. Weapons for hunting wild animals are not always suited for fighting other humans. When towns grew sufficiently large, a permanent group of professional soldiers probably came into existence to guard the local ruler, preserve the peace, and be the nucleus of the militia when needed.

By 3,000 BC, the first great palaces and kingdoms were growing up along the Nile River, the Tigris and Euphrates Rivers, the Indus River, the Yellow River, and along the eastern Mediterranean coast in Greece, Anatolia, and the Levant. These kingdoms prospered and jousted with each other for about 1800 years. Populations within the kingdoms rose along with their standard of living and wealth. Each was forced to raise and maintain substantial armies to preserve their autonomy from each other and from barbarians on their borders. Artwork from approximately 2500 BC shows a Sumerian army of spearmen wearing long cloaks and what appear to be leather hats or helmets.

The Egyptian army was forged in the struggle to unite the Nile basin under one leader and then defend the basin from barbarians in Libya and Palestine. The city-states along the Tigris and Euphrates fought with each other and with barbarians to the north and east. The Greek kingdoms faced barbarians to the north and west. The Anatolians faced barbarians to the northeast and north across the Black Sea, and along their south coast. The Indus and Yellow River valley kingdoms were

surrounded by barbarians. In each of these areas the kingdoms built and equipped armies to respond to threats. They had the wealth and industrial power to make bronze weapons. Competition among them lead to technical and tactical innovations in war.

Chariot armies

For much of the second millennium BC the armies of the wealthy kingdoms and palaces appear to consist primarily of chariots bearing archers with powerful composite bows. Records, grave goods, and artwork all point to chariot-borne archers dominating the battlefields. Accounting records read of chariot parts, bows, arrows, and horses, but not swords or armor. Horses of the time were ridden bareback and thus were not suitable generally for lancing and shooting.
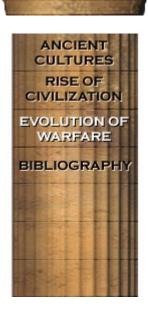
Chariot battles were possible in the open, relatively flat, developed farmland of the kingdoms. So long as enemies came to the kingdom, either from another kingdom or from barbarian lands, the chariots could decide the issue. If the kingdom had to venture into the hills and mountains of barbarian lands, however, then infantry were necessary.

Chariot crews, especially the archer, were probably noblemen or of the elite. The pharaohs of the period, for example, took special pride in their marksmanship and seem to have led their armies from the front.

Chariot armies did include other arms. Infantry was still useful for manning and attacking fortifications, and for fighting in rough terrain. There is also substantial evidence that skirmish troops accompanied the chariots onto the battlefield. Egyptian accounts speak of "runners" (skirmishers) accompanying chariot attacks to dispatch crews of disabled chariots. Skirmishers may have occupied ground on the battlefield unsuitable for chariots, from which they could have supported friendly units by firing missiles at the enemy.

Chariots of the period were primarily for two men and pulled by two horses. Earlier chariots had carried up to four men and were pulled by two to four onagers, a type of wild ass. Crews of these earlier chariots may have thrown javelins instead of shooting arrows. An alternative view is that they may have been used primarily as transports rather than as mobile platforms for missile attacks.
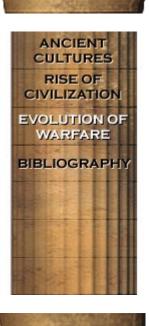
The evolution of battlefield tactics

Between 3000 BC and 0 AD, weaponry and battlefield tactics went through many significant changes. Spearmen and foot archers made up the first dominant armies, but they were replaced by chariot archers, who dominated from 1700 to 1200 BC, near the end of the Bronze Age. At that time a catastrophe befell most of the established kingdoms and palaces. Outside of Egypt and Assyria, all were burned when barbarian infantry and light troops reestablished battlefield dominance, making chariots obsolete in a few decades.

An ancient Dark Age lasting 500 years followed the barbarian conquests and ushered in the Iron Age. During this chaotic period, infantry reassumed battlefield domination, although cavalry began to appear and grow in importance, especially in the Middle East. The Classical Age associated with Greek culture followed the Dark Age. The infantry phalanx of Greece was predominant on their battlefields, but Persian armies were more integrated, adding missile troops and extensive cavalry. The concept of the integrated army was perfected by Philip and Alexander the Great of Macedonia in the fourth century BC. At the head of this army, Alexander conquered the known civilized world by the age of 32 years. Relative peace settled on the East in the wake of Alexander's conquest, but in the western Mediterranean, Roman legions began to assert themselves. The Roman legions were integrated armies based on infantry that dominated the rest of the ancient era.

Militia spearmen

Skirmishers

The age of chariots

The restoration of infantry, 1200 BC

The appearance of cavalry

The Greek phalanx

The integrated army

Roman legions

Militia spearmen

The spear was relatively easy to manufacture and wield, making it an excellent choice for the first militia armies called upon to defend towns from barbarians. The spear was a pointed weapon standing about as tall as its wielder. It was a one-handed weapon that could be thrown or thrust. Spearmen usually carried a long oblong or rectangular shield in the opposite hand that protected the entire body from arrows and enemy spears.

Groups of spearmen were trained to form rows across and files deep and to march in step. Grouping together helped maintain morale and the shield wall helped neutralize arrows. The key to success for columns of spearmen was to keep together and present a unified front of shields and spear points. A large group of disciplined spearmen must have been an imposing and intimidating sight to undisciplined troops and barbarian raiders.
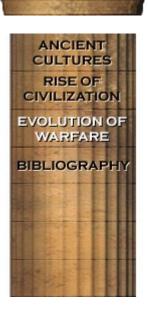
Spearmen provided shock on the battlefield. Shock was the moment when the fighters on two sides actually came face-to-face for hand-to-hand combat. Spearmen simultaneously attempted to protect themselves from the enemy's weapons with their shield while seeking an opening with their spear. At the moment of contact the noise level was tremendous as weapons clanged and men screamed. As a man in the front rank fell, the man behind pushed forward to take his place.

Hand-to-hand combat was a terrifying experience that any sane person would have liked to avoid. Soldiers could be motivated to participate in such a confrontation only through high morale, good leadership, and discipline. The moment of shock was a test of will. One side usually gave way and ran long before being wiped out entirely. Utter destruction was possible only if the routed troops could be run down or trapped before they reorganized or reached safety.

Battlefields became a place of maneuver as each side attempted to place its opponent in a position that was untenable without requiring the dangerous hand-to-hand clash. Columns were extended into lines to overlap the enemy. Troops that were flanked, facing enemies to both front and side, usually gave way before contact.

The importance of militia spearmen columns was that they had the ability to take ground. When they advanced, the enemy had to meet them or fall back. If the enemy did not have the will to meet them, the spearmen infantry was victorious, occupying the river ford, hillside, mountain pass, or other geographic feature for possession of which they were fighting.

Skirmishers

The battlefield innovation that followed militia spearmen was the provision of skirmishers, sometimes referred to as light troops. Skirmishers were usually equipped with missile weapons such as bows, slings, or javelins. Their job was to harass the enemy infantry columns with missiles, causing casualties, shaking morale, and breaking discipline prior to the clash of the spearmen columns. If the enemy's column could be disorganized before the clash, it was likely that their morale would break upon contact with a disciplined column of erect shields and thrusting spears.

Skirmishers required more training than militia spearmen, however. Where the spearmen found relative safety within their columns, skirmishers acted independently, running forward to loose their missiles and then running back if necessary. There may have been others nearby conducting the same type of attack, but there was not the comfort of a solid wall of friendly troops nearby. Light troops were not expected to meet the enemy face-to-face. Fighting independently they did not have the strength of numbers and could not stand against a solid infantry column. They looked for weakness and opportunity, rushed in, and fell back before strength.
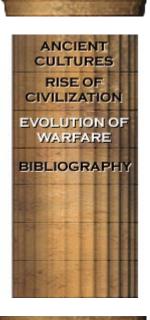
Skirmishers did not usually carry shields. Their defensive strength was the ability to move more quickly than the spearmen columns moving in step and carrying cumbersome shields and spears. They hit and ran, taunting the enemy and trying to make them as uncomfortable as possible.

Slingers were the easiest skirmishers to equip. All they required was a cloth sling a pocket of stones. Additional ammunition could be found lying on the battlefield. Javelins were no more difficult to provide than spears, but once thrown they were usually lost. Artwork from the second and third millennium rarely shows javelin throwers holding more than two weapons. Javelin throwers must have waited until the infantry columns were closing to be effective. Skirmishers used the simple bow of limited range. The much more powerful composite bow was known in the second millennium, but was too costly to manufacture in quantity for light troops.

The addition of light troops to armies was an important military innovation. This was the beginning of combined arms—the provision of different types of troops for different battlefield missions and their use in concert to achieve victory. Generals thereafter were required to know how best to use infantry and skirmishers together and how to defend against the combination.

The most famous skirmisher in history was David, who slew the Philistine Goliath with a stone from his sling.

The age of chariots

The first chariots seem to have appeared in Mesopotamia around 3000 BC, but came to prominence around 1,700 BC. At first they were slow and cumbersome vehicles pulled by the relatively small and slow onager, a cousin of the ass. When the much more powerful horse was employed for power, they became a more terrifying, useful, and prestigious weapon.

Historians have long pondered why chariots were so prominent in the accounts and pictorial representations of battle from 1700 to 1200 BC. In all the settled kingdoms and palaces of the late Bronze Age, from Egypt, to Babylon, to Assyria, to Anatolia (the Hittites), to Knossos (Crete), and Mycenean Greece, chariots seemed to dominate the battles.

Chariots were used as fast, mobile platforms for composite bow archers. The relatively slow foot troops were at a great disadvantage when fast chariots could drive up, stop out of range, and pelt the infantry with powerful composite bow shots. The infantry was faced with the choice of falling back to a protected location or dying in place. If they advanced against the chariots, the chariots fell back faster and kept shooting. Infantry thereby lost its ability to take and hold open ground on the battlefield. Chariot archers could be contested only by other composite bow archers.

Cavalry was not the answer to the chariots because the technology of the saddle, bit, and stirrup did not yet exist. A bareback rider could not use a lance at all or a bow with accuracy. Cavalry does not appear on battlefields with any consequence until around 900 BC.

Infantry in leather or cloth armor, or behind wood or leather shields, could not stand up forever to composite bow shots. They would fall eventually. Bronze mail armor was too expensive for common soldiers in this period. If the infantry broke formation, they risked being run over by pursuing chariots.

Chariots were manned by two men—the driver and archer—and pulled by two horses. The crew stood on a leather platform and both wore leather or bronze mail armor from head to calf. They were probably tied into the chariot to free their hands for driving or shooting. The expense of bronze mail and composite bows were justified because the chariot armies were relatively small. Even the largest and richest kingdoms maintained no more than several thousand chariots at most.

There is some evidence that Egyptian chariots were organized into groups of ten. These may have been distinguished by name or color, or by carrying left or right-hand firing archers. Five such groups made up a squadron. Each squadron had a commander and several squadrons made up a "host of squadrons." In his autobiography, the Egyptian Meryptah reports serving in squadrons named the "Phoenix" and "Manifest in

Justice." Among the positions he held were "standard bearer of the chariot warriors" and "first stable master." All the great Egyptian military pictorials from this period show the pharaohs fighting as archers from speeding chariots.
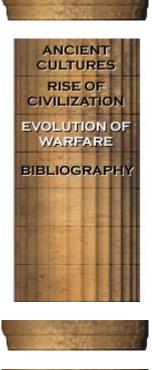
Chariot tactics

Chariots attacked in wide, shallow lines, probably spread apart to facilitate turns or crashes without fouling neighbors. There may have been three or four lines, but the rear lines would have had impaired shots. Spreading wide minimized the risk of being flanked while maximizing the chance of flanking the enemy. A short chariot line must have run when facing a significantly longer line because it would have been easily enveloped, brought to a halt, and shot to pieces. A force might have split during its approach, with left-handed shooters turning to the right and right-handed shooters turning to the left, hoping to simultaneously flank the enemy line. A concentrated squadron may have attempted to drive a wedge through the enemy line and then wheel to both sides once through.

The archers presumably opened fire when the range closed to 200 meters or less. As the range closed, shooting accelerated. The point of the chariot battle was to bring down as many opposing chariots as possible by shooting the enemy's horses. The felling of one horse from a speeding chariot must have caused a wreck. It is not clear if opposing lines would charge through each other while firing or if they would approach, wheel, and shoot. A clash of chariot lines could cause a massive pileup of entangled horses and cars, or the point-blank shooting must have caused large numbers of casualties quickly.

Once the lines had passed or turned, the archers faced to the rear to keep shooting as the range opened. The chariots would then have wheeled and charged again. At some point, one side would break and run for a nearby fortification or safe position.

Around 1200 BC, however, chariots lost their battlefield dominance. In a period of roughly 50 years, chariots were largely eclipsed and most of the great kingdoms and palaces of the Eastern Mediterranean and Near East fell. City after city, including Troy of the *Iliad*, was destroyed and left in ashes. Only Egypt and Assyria escaped immediate destruction and the area entered a 500-year Dark Age. The principal reason for this catastrophe was the resurgence of barbarian infantry that used new weapons and tactics on the battlefield to defeat the chariots and overrun the kingdoms they defended.
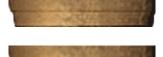
The restoration of infantry

The catastrophe of 1200 BC was traditionally attributed to a large influx of barbarians from Asia into the Mediterranean and Near East. The barbarians were thought to have overrun much of the area, displacing the locals, who in turn invaded more southerly areas. Where the displaced groups invaded by sea, they were referred to as the mysterious Sea Peoples.

An alternative view refutes the Asian influx and attributes the catastrophe to hordes of local barbarians who had always been near at hand, in the mountains and marginal lands that surrounded the more fertile areas. The barbarians included the Libyans to the west of Egypt, the northern Greeks (more likely the sackers of Troy than the Myceneans), tribes along the south coast of Anatolia, and the Philistines and Israelites of Palestine. Sea raiders from Sardinia, Sicily, and what is now modern Italy had a long history of piracy and serving as mercenaries, especially for Libya versus Egypt. They may have been the Sea Peoples.

Prior to 1200 BC these barbarians had been defeated consistently by the chariot armies when they ventured down from their hills and mountains, or across the seas. Around 1200 BC, however, evidence indicates that the barbarians made several changes in their weaponry and tactics that quickly ended the dominance of chariots.

Military historians have noted the existence over time of a competitive cycle in the improvements and innovations concerning the three ingredients of warfare: firepower, security, and mobility. Changes in any of the three—such as an improved bow, better armor, or chariots or horses—could temporarily upset a pre-achieved general equilibrium that determined tactics, giving the innovator an advantage until changes in the other ingredients restored the equilibrium through new tactics. Around 1200 BC, the barbarians on the fringes of the civilized world made too many changes to the ingredients of warfare too rapidly. Before a new equilibrium of new tactics could be achieved, most of the civilized world was lost.

Improved weapons

The important technical innovations of this time were the cut-and-thrust sword, the small round shield, and improved armor. A sword that could both cut and thrust made individual soldiers more dangerous in hand-to-hand fighting. Such a sword was easier to wield than a long spear. Many more blows, and more powerful blows, could be struck. The smaller shield was easier to manage than the tall and cumbersome shields used by the spearmen. Bronze greaves and other pieces of body armor also appeared at this time, as evidenced by artwork and

archaeological remains. These advances in armor helped protect infantry from archery.
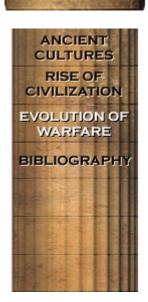
Improved tactics

The most important innovation of the period was probably in tactics. Barbarian infantry finally learned how to defeat chariots after fighting them for 500 or so years. Better armor, mobility, and tactics must have allowed infantry to get close enough to the chariots to kill the horses with missiles, especially javelins. Once the chariots were disabled, the crews were quickly overcome. One after another, the chariot armies of Greece, Anatolia, and the Levant were beaten and the cities they protected were sacked.

Egypt withstood several assaults by fielding armies of the new infantry to support their chariots. These new Egyptian infantry armies were primarily barbarian mercenaries who employed the new weapons and tactics in support of their chariots. In 1208 BC the Pharaoh Merneptah claimed to have killed nearly 10,000 invaders. In 1179 BC Rameses III stopped another Libyan invasion at Djahi, claiming 12,235 enemy dead.

Assyria, dominant over most of Mesopotamia, avoided destruction also. It was on the frontier and threatened by enemies in the Zagros Mountains to the east and in other mountainous areas to the north. Assyrian armies had much experience fighting barbarians in the rough terrain where chariots could not go and kept their enemies in check through punitive expeditions into the hinterlands. By 1200 BC the Assyrians had adapted to the new military innovations themselves and were not overly dependent on chariots.

Following the catastrophe of 1200 BC, the previously advanced areas fell into a Dark Age. Trade and production fell, and the expensive and now ineffective chariot armies became a luxury few could afford. Out of the waste and destruction, however, new strongholds and kingdoms eventually began to appear, and from the east came the next important innovation of war: the cavalry.

The appearance of cavalry

Evidence and accounts from many sources, including the Bible, indicate that cavalry was in at least limited use by the twelfth century BC and that by the tenth century some kings were deploying thousands of horsemen in their armies. Mounted horsemen appear in earlier Egyptian reliefs, but we cannot be sure if they represented scouts, messengers, or combatants.

Following the catastrophe, cavalry began appearing in armies, both replacing and supplementing chariots. By the mid-ninth century, cavalry was well developed, at least in parts of Mesopotamia. In that period the Assyrian king Shalmaneser III claimed to have 2000 chariots and 5500 cavalry at the battle of Qarqar where he faced troops on both horses and camels.

Advantages of cavalry over chariots

An Assyrian relief carving from the ninth century shows archers shooting from horseback. The cavalrymen fight in pairs—one man controls both horses while the second man shoots. This evidence implies that the first mounted soldiers fought as archers from horses, essentially performing the same role as chariots did previously, but with some important differences.

Mounted men were much more agile than chariots and could cross almost any type terrain. Chariots, in contrast, were relatively cumbersome to turn and to move in groups, and were restricted generally to flat open terrain. It was much easier for a cavalryman to escape if events turned for the worse. If his horse was lost, it was possible to double up on another to get away. The crew of a disabled chariot was in serious danger, especially if skirmish troops were accompanying enemy chariots. A chariot was an investment in two horses and two men, plus the car, to put one archer on the field. An investment in two horses and two men as cavalry also put one archer on the field because at first only one man could shoot while the second controlled both horses. A reference from the Bible (2 Chronicles 1.17) reports that in the tenth century, the chariot car cost twice as much as the horse team to purchase and maintain.

Chariots effectively disappeared from battlefields in the eighth century following the technical innovation of new ways to rein horses. This innovation allowed cavalrymen to operate independently rather than in pairs. From this point on, two horses supported two archers, not one, doubling the firepower from the horses committed. This innovation is displayed in reliefs from the reign of Assyrian king Tiglath-Pileser III from around 750 BC.

Light cavalry tactics

Cavalry archers did not dominate battlefields as chariots had in a similar role previously. Iron Age battlefields were dominated by infantries. The initial battlefield role for cavalry was to defeat the opposing cavalry and drive them away. This protected friendly infantry from harassment and freed the friendly cavalry to help destroy the enemy infantry by encircling them, shooting into their unprotected rear and flanks, and generally lowering their morale prior to the moment of infantry combat. If the enemy infantry panicked and fled, cavalry could pursue and run them down. Assyrian reliefs show cavalry dispatching fleeing foot troops with lances.
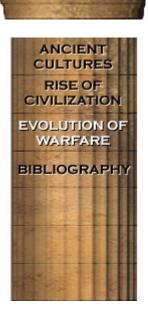
Heavy cavalry

From 1200 to 400 BC cavalry was primarily a light (unarmored) mounted skirmishing force, useful also as scouts, screens, and in pursuit. In Macedonia during the fourth century a new type of cavalry came into use —heavy cavalry for shock attack. The people of this region were noted horsemen and developed a tradition for using a lance from horseback. This was a difficult skill to master because the stirrup did not yet exist. The lance had to be released just prior to impact to prevent the horsemen from being pulled off his mount.

The Macedonian army built by Philip and Alexander was unique for the last millennia of antiquity because its decisive arm was its cavalry. The Macedonians had not adopted the phalanx of their southern neighbors for their entire army because the terrain of their homeland was very broken and enemies to the north were mainly horsemen.

The best of the Macedonian cavalry were the Companions, mainly aristocrats who had ridden since their youth. They wore a metal breastplate or coat of mail armor, fought with the lance as mounted spearmen, and attacked as shock troops. Their spear was nine feet long and had an iron point on both ends. It weighed only 4.2 pounds and could be thrown. The back end could be stabbed down or the front end held forward as a lance. The men also carried a long curved sword.

Macedonian heavy cavalry was the finest of antiquity. No other cavalry approached their effectiveness in battle until the stirrup was invented and the mounted knights appeared in Europe during the Middle Ages.

The Greek phalanx

Little is known about Dark Age warfare in many previously civilized areas. By 700 BC, however, a new military system called the phalanx had been established in Greece.

Phalanx organization

The Greek phalanx was a column formation of heavy infantry carrying long spears, or pikes, and swords. The pikes were six to twelve feet long, much longer than spears of the past. Men in the phalanx carried a round shield called a *hoplon*, from which the infantry took their name, *hoplites*. The *hoplites* wore metal armor on their chests, forearms, and shins at least, plus a metal helmet that covered the head down to the neck. The addition of armor classified the *hoplites* as heavy infantry, as opposed to light infantry that wore little or no armor. A typical phalanx unit was ten men across the front rank and ten men deep, but many such units were combined into one larger unit.

The phalanx in battle

The phalanx was an offensive infantry formation for hand-to-hand shock combat. It usually fought without light troop or cavalry support, which should have been an important disadvantage, but the Greeks largely ignored these auxiliary troops. As long as they fought among themselves, lack of missile troops and cavalry was not a problem.

The heavy infantry on each side in a battle would close with each other at a deliberate pace, maintaining formation. When the opposing phalanxes came together, the first several ranks would lower their pikes and the two sides would thrust at each other, attempting to strike an unprotected area on an opponent. The pike points of several men in a file could project beyond the front rank. Men in the front were simultaneously attacked by several spears.

The Greek armies of the period 700 to 400 BC may have been the only ones in history to rely completely on shock tactics. The clash of phalanxes was resolved entirely in hand-to-hand fighting. The city-state of Sparta was the recognized master of phalanx warfare. The entire state was organized as a military camp. All non-serf males served in the Spartan phalanx and trained at length.

Because the hoplites carried their shields on their left arm, the phalanx was most exposed on its right side. For that reason, the best phalanx units were positioned normally on the right side of the army. Battles often became a contest to see which army's right wing would first destroy the other side's left wing. Phalanx armies were susceptible to missile and cavalry attacks from the right and rear, but only if the enemy had these units and used them.

Phalanx warfare reached its peak in two great fifth-century wars—the war with Persia at the start of the century and the Peloponnesian War near its end. In both wars, sea power played a crucial role, but land fighting centered on the phalanx.
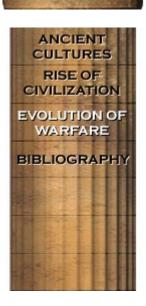
The phalanx at war

The Peloponnesian War was a Greek civil war for the dominance of Greece between the sea-oriented Athenians and the land-based Spartan League. One major lesson of the war was the inability of the phalanx to be strategically decisive. Heavy infantry alone could not capture cities once the battle outside the walls had been won.

The war with Persia was especially interesting because the Greek phalanx, the finest heavy infantry in the world at the time, faced an integrated army of infantry, skirmishers, and cavalry. The Persians and Assyrians before them backed their infantry with auxiliary troops of every kind. They were also advanced in the art of siege warfare.

The two great land battles of the Persian war occurred at Marathon in 490 BC and Plataea in 479 BC. At both battles a smaller Greek army consisting almost entirely of heavy infantry was victorious. Historians generally agree that Greek discipline and training were greatly responsible for these results, but admit that they were also at least partly due to Persian mistakes and incompetence. At both battles the Persians had substantial light troops and cavalry that should have been effective against the massed phalanx formations. The Persian army at Plataea contained 10,000 cavalry, for example. At both battles, however, the auxiliary troops were poorly used and ineffective, allowing the Greek heavy infantry to defeat the weaker Persian infantry and achieve victory. Greek heavy infantry morale was not significantly reduced prior to the moment of shock. When the two infantries clashed, the Greeks were able to overwhelm the Persian infantry and drive it from the field.

The Greeks resisted the conversion of their heavy infantry armies to integrated armies into the late fourth century. Despite much evidence that the phalanx was at a disadvantage when facing skirmishers and surrounded by cavalry, the concept of the phalanx was too important a fixture of their culture. The phalanx had won the Persian war, with the help of the navy, and Greek heavy infantry served with distinction as mercenaries in surrounding lands. It took a clear demonstration of the system's weakness to bring it to an end. That demonstration was carried out by invaders from Macedonia under the leadership of Philip, father of Alexander the Great.

The integrated army

The evolution of battlefield tactics peaked with the integrated army of multiple arms. Each arm had a battlefield role and mission. The army that best employed its various parts, using its rocks to break the enemies scissors, had the best chance of victory. An army that was not integrated, like the Greek phalanx armies, or an army only partially integrated, was at great risk because it might be at a significant disadvantage on offense, defense, or both.
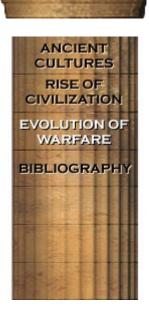
Assyrians

Integrated armies were first deployed in Mesopotamia during the second millennium. The Assyrians, especially, learned by trial and error to use infantry, skirmishers, chariots, and cavalry in battle simultaneously because they had to face a wide spectrum of enemies. They fought advanced chariot armies to their south and northwest (the Babylonians and Hittites) and barbarians to their west, east, and north. They had enemies in every direction and learned new techniques from fighting each. The best weapons, formations, and tactics from each were adopted or foreign troops were hired as mercenaries to supplement the army.

Alexander the Great

The greatest integrated army of antiquity was probably that of Alexander the Great. This army combined heavy hoplite infantry, heavy cavalry (the Companions), light cavalry, skirmishers, and light troops from several different cultures into an integrated whole. Under the brilliant tactical and strategic leadership of Alexander, the army conquered Greece, Anatolia, the Levant, Mesopotamia, Egypt, and the Indus Valley in the incredibly short period of 10 years (336 BC to 326 BC). Alexander consistently used the parts of his army to perfection, employing the various units where they had the best chance of success. He was successful in all the battles he fought, even though he was usually outnumbered significantly.

Roman legions

The last great integrated army of antiquity was that of Rome. Civilization spread to the western Mediterranean after the end of the ancient Dark Age, carried there by traders from Phoenicia and Greece. By the third century BC, Carthage and Rome were at war for dominance of the western Mediterranean. The Punic Wars between these two powers were on and off for over one hundred years, ending with the destruction of Carthage and enslavement of her people. Roman expansion continued after the fall of Carthage and eventually the Roman Empire encompassed Alexander's conquests, minus the Indus Valley, plus most of Britain, southern Europe to the borders of the Rhine and Danube Rivers, and North Africa. The empire was acquired and defended by the self-sufficient legions of the Roman Army.

Legion organization

The Romans adopted the phalanx formation for their infantry around 550 BC, but this proved impractical in the hilly terrain of Italy. They evolved a heavy infantry system of smaller 120-man units called maniples —literally a handful. The maniples could be employed in column-like a phalanxes or in lines. The maniples were the basic building blocks of a legion. The number of legions in service started at four and grew as the Empire expanded. A legion was a largely self-sufficient fighting force of light troops, heavy infantry, and cavalry.

A legion of second century BC consisted of 4200 men drafted from the citizenry of the Republic. All non-slaves reported for possible induction. The 1200 youngest and poorest recruits were assigned as light troops called *velites*. These men carried swords, javelins, and a small round shield, but no armor. The 1200 that were next in terms of age and property became *hastati*, the first line of heavy infantry, followed by the next 1200 called the *principes* in the second line. The *hastati* and *principes* carried an oval shield, a Spanish short sword (*gladius*), and two *pila* (throwing spears). The oldest 600 men formed the third line and were called the triari. They carried a thrusting spear instead of the *pilum*. All foot soldiers in the legion usually wore a bronze breast plate, helmet, and greaves.

The richest men in the draft usually ended up in the legion's cavalry contingent of 300 or so men. These were divided into 10 groups of 30. Roman cavalry of the second century carried a round shield and long spear.
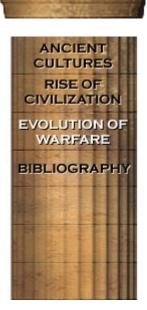
The legion in battle

A legion probably advanced in three lines behind a screen formed by the *velites*. The first line was the 10 maniples of *hastati*. A gap was left

between the maniples equal to the width of their frontage. The *principes* formed the second line, with their 10 maniples probably arranged behind the gaps in the first line. The *triari* formed the third line. Cavalry was deployed to the sides to keep other cavalry and light troops from the flanks.

As the moment of infantry shock approached, the *velites* loosed a hail of javelins against the enemy and then retired through the gaps in the lines behind them. Once the *velites* had passed, the rear ranks of the *hastati* maniples moved into the gap between the maniple on the left, forming a continuous line. Just before impact with the enemy, the *hastati* threw their *pila*. This missile attack prior to the shock of infantry battle helped disorganize the enemy and weaken their morale. The shaft of the *pilum* was designed to bend rather than break. If it struck a shield instead of a soldier, it hung there, weighing down the soldier's shield arm just as the infantry clashed. When the hastati threw their *pila*, they were acting as their own missile troops. These throwing spears were designed to bend, not break off, if they penetrated an enemy shield. This greatly weighed down the enemy's shield, making it almost useless. The *hastati* then followed up their *pila* attack by closing for hand-to-hand fighting with their short swords which were designed for cutting and thrusting.

The heavy infantry of the Roman legion was the decisive arm of their army. They were superbly trained and vigorously disciplined, making them very tough opponents.

Siege warfare

The earliest sizable towns yet discovered by archaeologists were fortified. At least one historian believes that the need for walls as protection from war was the impetus for the first cities, not the agricultural revolution. Most ancient city sites show evidence of both walls and of being destroyed at least once in their existence. Heinrich Schlieman, the first excavator of Troy, had to decide which of several successive destroyed cities he found on the site was the Troy of the *Iliad*. If the walls discovered at most ancient cities are evidence of war, the subsequent evidence of destruction is evidence that the ancients had also mastered siege warfare—the taking of walled cities by force.

Siege engines

The first equipment designed specifically to take walled cities for which we have evidence was a ladder with wheels on its base depicted in an Egyptian relief. The engraving shows the ladder already wheeled up against an enemy wall and soldiers climbing up to the fight. Most cities sacked in the third millennium BC and before were probably taken by scaling the walls or breaking down the gates.

Prior to the time of Alexander the Great, the cultures and kingdoms of Mesopotamia were the most advanced in building specialized equipment for taking cities. The principle construction material in this region was sun-dried, or later fire-baked, mud bricks. One important siege engine from this area was a battering ram sheltered within rolling protective framework that could be rolled up against the mud brick walls. Under the cover of the roof, engineers inside could use the metal tipped ram to break and gouge out bricks, eventually crumbling sections of the wall and forming a breach that could be stormed.

As the cities got larger and fortifications stronger, new equipment was required. The structure covering the battering rams increased in size, becoming movable towers. When wheeled up against the walls, archers from the top could fire down or along the walls. A ramp lowered from the tower to the wall, allowed attackers to advance into the city. More attackers could climb up within the covered tower before crossing over into the attack.

Catapults, the first long-range missile weapons, were invented in Syracuse, Sicily, in 399 BC. The king of Sicily, Dionysius I, assembled craftsmen to design machines to aid his assault of an island fortress on the coast. Catapults hurled large stones against walls from a distance, minimizing the danger to attackers while slowly crumbling the defenses. The stones fired against the wall built up at its base, forming a rough assault ramp into the breach. Within sixty years, advanced catapults

were standard weapons in the armies of both Greece and Persia.

Famous sieges

The best-known siege of antiquity was the destruction of Jericho by Joshua's trumpet as recorded in the Bible. Other well-known sieges were the taking of Tyre by Alexander the Great and the siege of Alesia by Julius Caesar in .
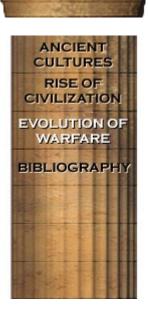
Tyre

In 332 BC Alexander advanced down the Eastern Mediterranean coast after his victory at Issus. The coastal cities surrendered one by one, except Tyre, an island fortress one half mile off the coast with walls 150 feet high. The Greeks began building a 200-foot causeway out to the island. When the Tyrians began firing on the construction crews with catapults, Alexander built two 150-foot towers on the causeway armed with catapults to fire back. These were burned by a fire ship but Alexander responded by widening the causeway and building more towers. Alexander anchored ships off the walls to serve as platforms for battering rams. The walls of the city were finally breached from the ships and causeway. The elite troops of Alexander's army led the assault, infuriated by Tyrian tactics. More than 8000 Tyrians were killed in the final attack and the remaining 30,000 inhabitants were sold into slavery.

Alesia

In 52 BC Julius Caesar was attempting to subjugate the Celtic tribes of Gaul (modern France) at the head of 12 Roman legions. He bottled up a leader of the Gauls, Vercingetorix, in the hilltop town of Alesia (modern Alise-Sainte-Reine near Dijon). Expecting a relief force to break his siege, Caesar's problem was to defend the long circumference, keeping Vercingetorix in while being able to respond to an attack from the outside. Caesar surrounded Alesia with a 14-mile-long double fortification of wooden walls, walkways, towers every 800 feet, deep trenches and pits filled with spikes. The traps, pits, and trenches were designed to slow any attack so that legionnaires could quickly move from their camps around the circle to any threatened spot before the Gauls broke through. Several assaults from within and without failed, and Caesar was able to drive off the relief force with the help of mercenary German cavalry. The city of Alesia surrendered and Vercingetorix became Caesar's prisoner.

Naval warfare

Very limited evidence of war at sea exists until the Greco-Persian Wars and Punic Wars of the last millennia BC. Historians are left to make largely educated guesses about sea fighting prior to these events. For example, the Minoan civilization of Crete prospered as sea traders from around 3400 BC until the catastrophe of 1200 BC. For those two millennia the Minoans apparently controlled the Mediterranean Sea. Mycenean palaces on the mainland were fortified while Minoan palaces on Crete were not. The lack of fortification on Crete suggests that the Minoans controlled the seas so completely that walls were not needed. Crete was defended by warships at sea that prevented any potential invader from coming ashore.

Following the catastrophe of 1200 BC, various powers vied for control of the Mediterranean Sea, including the Greeks, Phoenicians, Persians (through Eastern Mediterranean port cities they controlled), Carthaginians, and the Romans. Fleets of several hundred warships clashed in many naval battles. From this period we have the best information available about the evolution of the ancient fighting ship and how sea battles were fought. Once the Romans gained dominance over the Mediterranean, making it almost a private lake, naval warfare (other than piracy) practically disappeared from Europe.

Evolution of the fighting ship

The first ships evolved into two major types—those built to carry a large cargo volume as traders or fishing boats at a sacrifice in speed and those built primarily for speed to carry small important cargoes such as diplomats or messages. Ships designed for war needed speed to run down the slower cargo vessels or to out-maneuver enemy warships.

The Importance of speed and maneuverability

Ancient courier and combat ships were galleys, relying on both sails and oarsmen for power, with the oars serving as a back-up power source in non-battle situations. Oar power was critically important during combat because it allowed precise and speedy movement, including fast turns (oared ships could essentially rotate in place by having the rowers on each side row in opposite directions) and backward movement. Sailing ships of the time had almost none of the maneuvering capability.

The first courier ships were long and thin, rather than short and wide, to maximize speed. A single mast might have been carried to provide wind power when conditions were right. A row of oarsmen were arranged down each side of the ship. The stroke of the oars was controlled by drums, chanting, or some other timing device. Oars had to be pulled

together to keep the ship movement smooth. Tangled oars or "catching a crab" (failing to withdraw the oar after the stroke and being pinned by it and the force of the ship's motion) interrupted movement and interfered with steering. This could mean disaster in battle.

War galleys

The most familiar ancient warship was the trireme, a long thin ship carrying three banks of oars on both sides and a ram on the prow. This ship had evolved from the Greek pentecontor that carried 50 rowers. Naval architects wished to add more power by adding more oarsmen, but the ship could not be made too long or risk breaking in the middle at sea. The solution was to add banks of rowers above each other. The basic trireme was powered by 170 rowers and was about 120 feet long. The first triremes were built by Corinth around 700 BC. After years of modification they became the predominate warship type from 500 to 300 BC.

The triremes were eventually replaced by super galleys that were much larger and wider ships. On the super galleys oars were manned by multiple men, up to as many as eight per oar. Super galleys appeared first in the navy of Dionysius I of Sicily, the ruler responsible for the invention of the catapult around 399 BC. Following the death of Alexander and the division of his empire, an arms race for control of the Mediterranean was touched off between the Antigonid dynasty in Macedonia and the Ptolemies in Egypt. During this period the largest oar-powered ships ever built appeared.

The most colossal of the new wide beam ships was built by Ptolemy IV of Egypt in the second century BC. It had a catamaran hull, apparently, with two hulls full of rowers and a large deck extending over both hulls like a modern aircraft carrier's deck. The writer Athenaeus reports this ship was 420 feet long and 57 feet wide. The third level oars were 57 feet long. It carried 4000 rowers, 400 other crewmen, and 2850 marines. It was the largest warship the world would see until the twentieth century. Historians believe this particular monster was more for show than practical use, but there are many accounts of smaller but still immense galleys engaging in combat.

Once Rome had established control of the Mediterranean world, the need for large super galleys disappeared after the battle at Actium in 31 BC. The Romans maintained sizable galley fleets, including several of the big super galleys, at big naval bases at Naples and Ravenna, plus smaller bases around the Mediterranean. The most useful ship in this navy was the liburnian, a light and fast two-deck galley equivalent to modern destroyer that was useful for chasing pirates and protecting commerce.

Naval weapons

For most of antiquity, warships did not carry ship-killing weapons. Naval battles were boarding exercises. Fighting ships closed with each other and the battle was decided by missile fire and hand-to-hand combat between crews. Ships carried contingents of soldiers for combat and oarsmen left their posts to join in once the fighting started.

The principal ship-killing weapon of the ancient world was the ram, which appeared sometime after the catastrophe and before 850 BC. A blunt ramming point was mounted below the waterline on a heavily reinforced

bow. Such a ram of bronze, weighing over 1000 pounds, has been recovered from the Mediterranean by Israeli archaeologists. The object of naval fighting was to drive the ram into the side or rear of an enemy ship, puncture it, and then pull back, leaving a hole that resulted in the ship sinking.

After 300 BC, grappling and boarding once again became important as ships increased greatly in size and became less maneuverable. The larger ships of this period carried large fighting contingents, up to the hardly believable figure of 2850 soldiers mentioned earlier.

A Roman innovation of the third century BC was a combination gangplank and grapple called a *corvus*. This large plank was held in an upright position until an enemy ship got close. The *corvus* was then released and swung down onto the deck of the enemy ship, simultaneously grappling the two and providing access for Roman marines to attack. The Romans were great land fighters but were at a disadvantage when fighting the superior navy of the Carthaginians. The *corvus* made it possible for the Romans to fight at sea using their strengths.

Dionysius I of Sicily was the first to mount catapults and other missile-firing engines on ships. These were useful in causing casualties to marines on the enemy's deck and a lucky hit in the rowing banks disrupted the rowing rhythm.
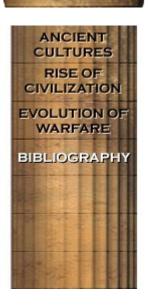
Sea tactics

The tactics of sea fighting were missile fire and hand-to-hand boarding attacks until the invention of the ram. The boarding tactics are well illustrated in a series of carvings commissioned by Ramses III of Egypt on his temple at Medinet Habu. These carvings celebrate Ramses III's naval victory over barbarian invaders around 1190 BC. He apparently surprised the barbarian fleet at the mouth of the Nile. The carvings show the antagonists fighting with bows, maces, spears, and javelins. Naval fighting at this time was primarily accomplished by moving ships adjacent, showering the opponent with missiles, and then boarding.

The fitting of rams to the prow of fast oar-powered ships changed tactics. The boarding of ships was de-emphasized for several hundred years. Ships maneuvered into position to race in quickly and ram. If the ramming ship could withdraw, the punctured ship usually sank quickly and with heavy loss of life. If the ramming ship was too slow in its attack, the ram might not punch through the enemy hull. If it attacked too fast, it might become stuck, leaving it motionless and vulnerable to other enemies. An account of a sea battle off the island of Chios in 201 BC mentions a ship stuck in such a manner being saved by a friendly ship ramming the already pierced enemy ship and pushing it off the stuck ship's ram. If a ramming ship missed, many of the oars on one side were sheered off, again leaving the ship vulnerable until replacement oars could be put in place.

Smaller and faster ships had an advantage in maneuverability, but the larger ships were stronger and more powerful. The ability of oar-powered ships to turn quickly made it difficult to catch them at a disadvantage, unless more than one ship could attack an enemy simultaneously. If a larger ship could turn its ram head-on against a smaller ship, the result was usually sheered oars, leading to grappling and successful boarding by the larger ship.

Fleets attempted to get around each other and attack simultaneously from two angles, making an anvil attack. The enemy could only turn to face one foe, leaving himself exposed to a second. One ship held the enemy in place on the anvil and the other struck the blow.

During last millennia BC, the oar-powered warships gradually got larger and more powerful, and began mounting fighting towers and catapults on their decks. Although boarding became important once again in the last centuries, warships continued to carry and use rams.

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