Big Era One
The horizon of human history
13,000,000,000 - 4,000,000 years ago

Landscape Teaching Unit 1.1
Creation Myths
13,000,000,000 – 200,000 Years Ago

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World History for Us All
A project of San Diego State University
In collaboration with the
National Center for History in the Schools (UCLA)
http://worldhistoryforusall.sdsu.edu/

Why this unit?

We all have a need to understand beginnings. People from different ethno-racial backgrounds and religions have rooted themselves in particular understandings of beginnings. One cannot understand the history of the world without understanding different ways in which individuals and groups have perceived the origins of the world. This unit engages students in a consideration of why an understanding of beginnings is so important to people. In it students will investigate, compare, and contrast different creation myths. Students will consider some of the modern scientific processes and procedures used to judge the validity of different creation myths, including the theory of evolution. Finally, based on their consideration of myths and scientific theories, students will examine what it means to "know" something and the role of theories in understanding the world around them. The content considered in this unit serves as a foundation for the entire world history course that follows.

Unit objectives

Upon completing this unit, students will be able to:

1. Explain why people possess an intrinsic need to understand both their and the world's beginnings.
2. Compare and contrast features of different creation myths, and analyze how these myths have satisfied the needs of people with different backgrounds to understand the origins of the world.
3. Describe the order in which different components of the universe came into existence, according to the Big Bang Theory.
4. Analyze the idea that people often understand the world through theories rather than absolute knowledge and that theories are based on the best knowledge available to people at a particular time.

Time and materials

3 class periods (40 minutes each)

Markers and/or crayons

Unlined paper

Author

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The historical context

Modern science theorizes that the universe appeared quite suddenly about 13,000,000,000 years ago. Since humans did not emerge on the scene for another 12,999,750,000 years, there is no first hand account of the world's origins. These origins remain a mystery. This time period, however, set the stage for human existence. Within these nearly 13,000,000,000 years the Earth developed, as we know it today, into a planet on which the human race could develop and grow. Modern scientists have extensively investigated the processes that enabled the development of our planet. For our purposes the actual processes that formed our Earth are not as important as the ways in which these processes have been perceived by humans.

Though people may never "know" with absolute certainty how our world came to be, they will never stop contemplating this question. Beginnings are fundamentally important, and a desire to understand beginnings is fundamentally human. People not only want to know about the beginnings of the world. They also want to know about their own beginnings, that is, their infancy and early childhood. Indeed, historians maintain that it is important to know where we started in order to understand how we have arrived at our present circumstances. Though people cannot know how the world began, this has not stopped them from developing explanations of it.

Throughout the very brief history of human existence, people have developed creation myths in an attempt to understand the world's beginnings. Though individual myths have similarities and differences with one another, all creation myths seek to explain how the world started. Individuals and communities often accept myths as valid explanations of something that has occurred. They accept creation myths because they believe that the myth contains a valid explanation for the ways in which the world came into being. While some myths lose their credibility over time, others continue to maintain adherents who accept them as valid. For example, the historian David Christian calls the theory of evolution the creation myth of the present time. The tenets of this myth, or scientific model, demand that thoughtful individuals apply certain "scientifically-acceptable" processes and procedures to an investigation of the world's beginnings. In calling the theory of evolution a modern-day creation myth, Christian does not mean that the theory of evolution is fallacious. Rather, he argues that evolution is the theory that modern people commonly accept as explaining how the world as we know it today was formed.

Modern historians consider the ways in which people representing different societies have perceived the origins of the world. They recognize that throughout their existence human beings have developed myths to explain their origins. While these myths may not accurately explain the world's origins, they do reveal significant information about the ways of life of the people, societies, and civilizations that conceived these myths.

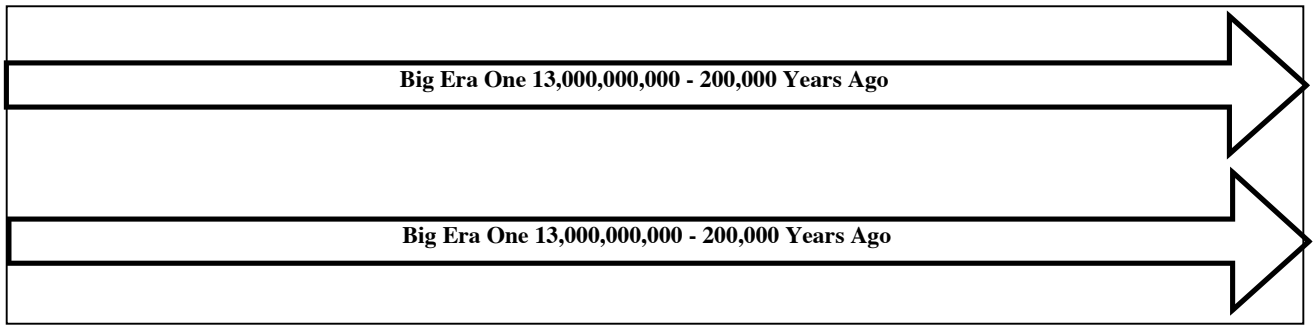
Creation myths typically place individuals, specifically their authors, at the center of creation. Simply put, the central motif of these myths often posits that the universe's creation specifically led to a time and place in which the authors and more generally the societies in which they lived

came to exist. These myths typically do not consider the idea that most of the history of the universe has unfolded without any human beings existing in it.

Many world history courses taught in American high schools begin more than twelve billion years after this course begins. Rather than starting with the origins of the universe, these courses typically begin with the paleolithic era, the period of history in which people survived as hunter/gatherers. As such, most history courses lend credence to the perception that people fill *the central* role in the universe. This course, on the other hand, begins with the origins of the universe, since this represents the beginning of time, as we know it. This starting point supports the idea that one cannot truly understand the human role in the universe without understanding the short period of time in which humans have inhabited the earth and the tiny amount of space that the earth occupies in the realm of the universe.

See David Christian, "World History in Context," *Journal of World History* 14 (Dec. 2003): 437-458.

This unit in the Big Era Timeline



Center of the Orion Nebula
NASA
http://hubblesite.org/newscenter/newsdesk/archive/releases/1995/45/

Lesson 1
Creation Myths

1. In groups of two or more, asks students to use available dictionaries to define the words "myth," "fable," and "scientific." After students have completed defining these terms, reconvene the class. Lead a discussion in which students consider the meanings of these three words. Help students understand that while both fables and myths teach important ideas, fables are typically accepted as fallacies. Myths, on the other hand, are typically accepted as factual depictions of something by some group of people at some point in time, even though people outside that group may regard them as fables. For example, even though some people consider the first two chapters of Genesis as a fable, others accept it as a scientific account of origins. Urge students to consider the difference between a myth and something that is scientific. In order to help students understand the difference between "myth" and "scientific," explain that while "scientific" requires observations through the senses, myths are ideas that people accept primarily because of belief rather than hard evidence. Ask students what they think the term "scientific story" means. Stories that are based on empirical observations might be called "scientific stories." As a challenge, ask students if they think that scientific knowledge can ever become myth.

2. Ask students to form groups of two or three and read the worksheet titled "A Creation Myth from the Yoruba People of West Africa." In their groups, students should answer the questions that follow the summary of this traditional creation myth. After students have answered these questions, reconvene the class. Tell students that approximately twenty-eight million Yoruba-speaking people live in Nigeria in West Africa. Today most Yoruba people are Christian and Muslim, but this myth stems from their ancient history. Invite students to share their answers aloud.

3. Now ask students to return to their groups and read the worksheet entitled "A Babylonian Creation Myth." Students should answer the questions that follow this excerpt. Then, reconvene the class, and invite students to share their answers. Ask students if they think the traditional Babylonian myth accurately describes creation processes. Students will likely agree that these myths do not contain accurate depictions. Ask students why they think that people might have accepted these stories as accurate depictions of the world's creation at one point in time. Encourage them to support their opinions. During this discussion, point out that while the Yoruba creation myth explains the way in which the entire Earth became populated, the Babylonian creation myth limits its explanation to Babylonia.

4. Now ask students to return to their groups and read the worksheet titled "A Story of Creation as Depicted in Genesis." Students should answer the questions that follow this excerpt. Reconvene the class, and invite students to share their answers. Ask students if they can prove that the ideas in this text are true. Ask if they can prove that the ideas in this text are false. Urge students to support their opinions.

5. Pose the following statement to students. "Only simple-minded people would develop a myth about creation." It would be best to write the statement on the board. Tell students who agree with this statement to go to one side of the room. Students who disagree with the statement should go to the other side of the room. Once students have gone to their chosen side of the room, inform them that the class is going to hold a debate. Ask each group to develop an argument sharing their perspective. After students have developed these arguments reconvene the class. Invite each group to present their argument to the class. Once both groups have presented their arguments, encourage students to challenge one another by asking probing questions. During this debate, students will hopefully examine the idea that ancient people developed creation myths using the knowledge that they possessed at the time. Both the time and place in which they lived constrained their knowledge. If students do not raise these ideas on their own, lead them to these ideas by facilitating the debate. (Note: If either group is too large to develop one argument, ask the group to break into two groups. Each group should then develop its own argument. If no students go to one side of the room, challenge a few of your students with good critical-thinking skills to develop an argument for that side of the room, even if they do not agree with it.)

6. Ask students if they think that the authors of these creation myths necessarily believed in their historical truth. Encourage students to consider the fact that the authors might have intended these myths to be interpreted symbolically. Ask students to contemplate the reasons that creation myths typically attributed the beginning of the world to one or more gods. Ancient people realized that they could not have created the world. Therefore they decided that a power, superior to themselves, must have created it. At the same time, people saw themselves as the center of creation, perhaps because they knew the world from their own perspective. They formed a theory based upon their own knowledge and reasoning skills. In other words, these authors might have recognized that they could not know how the universe came to exist. However, they desperately wanted to explain it. Therefore they developed these myths.

   Urge students to reflect on the lessons that might be learned from these myths, even if the myths lack historical accuracy. Point out that just as poetry often uses symbolic language, so do creation myths. For example, the last line of the Babylonian creation myth in Student Handout 1.2 states, "Marduk established Babylon as his own residence." Ask students if they think that ancient Babylonians truly believed that Marduk was one of their neighbors. Encourage them to consider what this sentence might mean, if it does not mean that Marduk actually lived in Babylon. Students should recognize that the authors believed in the central position that people held in the universe. Ask students why they think that myth writers might have written ideas that they did not intend to be construed literally. Help them understand that these writers might have used the language that they were most familiar with to explain very difficult ideas. For example, even if the authors did not believe that gods had human form, they did not know how to describe the gods without attributing human form to them. Consequently, they attributed human form to the gods in a symbolic manner. Students should understand that some people actually accepted the historical accuracy of creation myths. These people did not recognize

symbolic messages of creation myths; they thought that the ideas contained in the myths should be accepted literally.

7. Now, ask students if they can think of any questions that they would ask the authors of any of these creation myths if they could speak to them. (For example: "Do you *really* believe this stuff?") Perhaps one or more students will ask about the origins of the gods discussed in these different myths. If no students raise this question, raise it for them. While these creation myths explain how the world came into being, they do not explain how gods came into being. Help students understand that people who accept religious myths might believe that one or multiple gods have always existed, therefore they do not have to consider the origins of gods. However, non-religious people sometimes raise this origins question as problematic and perhaps believe that no good answer exists.

Earth
NOVA, Public Broadcasting System
http://www.pbs.org/wgbh/nova/origins/knoll.html

Lesson 1

Student Handout 1.1—A Creation Myth From the Yoruba People of West Africa

Before creation, Earth was a huge mass of water. Olodumare, the Supreme Deity and Sky God, summoned Obatala, his vice-deity, to his presence. He commanded him to begin creation, by creating "land mass." With a vine attached to a piece of dry soil, Obatala descended on the watery mass and began his job. He dropped the vine and soil on the surface of the water and with the assistance of a hen and a pigeon, anchored the vine and scattered the soil about. When a portion of the surface had been covered with the soil, Obatala eagerly reported to Olodumare the successful completion of the work of creating Earth.

Olodumare then commanded Obatala to return to the land mass, a place called Ife, to create human beings. Obatala started making human beings out of clay, but he made a mess of his work. Olodumare dismissed him and sent another being named Oduduwa to finish the job correctly. Oduduwa did well. He created the first community of humans at Ife and became their leader. Later he sent several of his own sons to found kingdoms in other parts of the region. And that's how the world became populated.

Source*:* Richard M. Dorson, ed., *African Folklore* (Garden City, NY: Anchor, 1972, 322-323.

Summary and Questions:

1. Summarize the above myth in your own words.

2. What can we learn about the way that ancient Yoruba people thought about creation from this myth?

3. Why do you think ancient Yoruba people thought in this way?

Lesson 1

Student Handout 1.2—A Babylonian Creation Myth (Enuma Elish)

Before the universe was created, the gods engaged in a civil war. One group of gods called Anunnaki determined to beat the other gods. They chose Marduk, a very young god, to serve as their leader. After arming himself, Marduk set out to challenge the monster-goddess Tiamat. After he killed her, Marduk cut Tiamat in half. He used her top half to form the sky and her bottom half to form the Earth. After Tiamat's death, those who sided with her were enslaved and forced to work for the Anunnaki gods. However, after some time passed, Marduk also destroyed Tiamat's husband, Kingu. From Kingu's blood, Marduk created mankind. Marduk established Babylon as his own residence.

For the text of Enuma Elish, the Babylonian creation story, go to
http://www.ancienttexts.org/library/mesopotamian/enuma.html

Summary and Questions:

1. Summarize the above myth in your own words.

2. What can we learn about the ways in which ancient Babylonians thought about gods from this creation myth?

3. What can we learn about the ways in which ancient Babylonians thought about themselves from this creation myth?

4. Why do you think that ancient Babylonians thought in these ways?

5. Do you think those who told these stories regarded some parts of them as symbolic and others as literally true? Which parts do you think they thought of as symbolic?

Lesson 1

Student Handout 1.3—Genesis, Chapter 1

[**1**] In the beginning God created the heaven and the earth.

[**2**] And the earth was without form, and void; and darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters.

[**3**] And God said, Let there be light: and there was light.

[**4**] And God saw the light, that it was good: and God divided the light from the darkness.

[**5**] And God called the light Day, and the darkness he called Night. And the evening and the morning were the first day.

[**6**] And God said, Let there be a firmament in the midst of the waters, and let it divide the waters from the waters.

[**7**] And God made the firmament, and divided the waters which were under the firmament from the waters which were above the firmament: and it was so.

[**8**] And God called the firmament Heaven. And the evening and the morning were the second day.

[**9**] And God said, Let the waters under the heaven be gathered together unto one place, and let the dry land appear: and it was so.

[**10**] And God called the dry land Earth; and the gathering together of the waters called he Seas: and God saw that it was good.

[**11**] And God said, Let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself, upon the earth: and it was so.

[**12**] And the earth brought forth grass, and herb yielding seed after his kind, and the tree yielding fruit, whose seed was in itself, after his kind: and God saw that it was good.

[**13**] And the evening and the morning were the third day.

[**14**] And God said, Let there be lights in the firmament of the heaven to divide the day from the night; and let them be for signs, and for seasons, and for days, and years:

[**15**] And let them be for lights in the firmament of the heaven to give light upon the earth: and it was so.

[**16**] And God made two great lights; the greater light to rule the day, and the lesser light to rule the night: he made the stars also.

[**17**] And God set them in the firmament of the heaven to give light upon the earth,

[**18**] And to rule over the day and over the night, and to divide the light from the darkness: and God saw that it was good.

[**19**] And the evening and the morning were the fourth day.

[**20**] And God said, Let the waters bring forth abundantly the moving creature that hath life, and fowl that may fly above the earth in the open firmament of heaven.

[**21**] And God created great whales, and every living creature that moveth, which the waters brought forth abundantly, after their kind, and every winged fowl after his kind: and God saw that it was good.

[**22**] And God blessed them, saying, Be fruitful, and multiply, and fill the waters in the seas, and let fowl multiply in the earth.

[**23**] And the evening and the morning were the fifth day.

[**24**] And God said, Let the earth bring forth the living creature after his kind, cattle, and creeping thing, and beast of the earth after his kind: and it was so.

[**25**] And God made the beast of the earth after his kind, and cattle after their kind, and every thing that creepeth upon the earth after his kind: and God saw that it was good.

[**26**] And God said, Let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth.

[**27**] So God created man in his own image, in the image of God created he him; male and female created he them.

[**28**] And God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth.

[**29**] And God said, Behold, I have given you every herb bearing seed, which is upon the face of all the earth, and every tree, in the which is the fruit of a tree yielding seed; to you it shall be for meat.

[**30**] And to every beast of the earth, and to every fowl of the air, and to every thing that creepeth upon the earth, wherein there is life, I have given every green herb for meat: and it was so.

[**31**] And God saw every thing that he had made, and, behold, it was very good. And the evening and the morning were the sixth day.

Source: *Bible, King James Version.* Humanities Text Initiative, University of Michigan. http://www.hti.umich.edu/cgi/k/kjv/kjv-idx?type=DIV1&byte=1477.

Questions:

1. How does this chapter of the Bible describe God's role in creation?

2. How does this chapter of the Bible describe people's role in the world?

3. Make a list of five details that this chapter of the Bible explains about creation.

Lesson 2
A Modern Perspective on the Origins of the World?

1. Ask students to write down three sentences about the beginning of their lives. After students have written these sentences, invite them to share their work with two or three other students. Then reconvene the class and ask students if the information that they wrote is important to them. Encourage them to support their opinions.

2. Now instruct students to read Student Handout 2.1. This is selections from "This Big Era and the Three Essential Questions," the introductory essay to Big Era one in the World History for Us All website (http://worldhistoryforusall.sdsu.edu/dev/eras/era1.htm). Ask students to use the information presented in this essay to construct a graphic representation of the process that transpired as the universe formed and life appeared on earth. Invite students to share their graphic representations with one another.

3. Dividing students into groups of three or four, ask them to respond to the following question: "Do you think that people should try to understand what happened at the beginning of the universe? Why or why not?" After students have discussed this question in their groups, reconvene the class. Ask a representative from each group to report to the entire class on the group's discussion. Facilitate a class discussion in which students consider why it might be important to consider the beginnings of the universe in a world history class.

4. Ask students to review the worksheet titled "The Chronology of the Universe Compressed into Thirteen Years" and to write down three things that they learn from this chart. After students have written their lists ask them to share them with one other student. After students have shared their lists, reconvene the class. Ask students to explain the most important idea that they learned from this chart.

5. Although the Big Bang Theory draws on the most advanced scientific knowledge available to explain the origins of the Universe, students should recognize that that knowledge does not stand still. Indeed, as new knowledge becomes available, theories built on old knowledge become outdated. In order to help students recognize the inherent instability in scientific knowledge, ask them to imagine what would happen if tomorrow they read a newspaper article explaining that the stars and planets of the universe have always existed but that a nuclear reaction took place 13,000,000,000 years ago (what scientists call the Big Bang Theory) which created the illusion of a new beginning. Ask students whether or not they would accept this information in place of what they already know about the origins of the world. Encourage students to support their opinions thoughtfully. Lead a discussion in which students consider that our present understanding of the origins of the world might change as new knowledge becomes available. Students should recognize that even though theories change as people develop new knowledge, previously identified findings are not always discarded with the advancement of knowledge. Instead scientists sometimes refine these findings to fit with new knowledge. For example, even in the hypothetical scenario presented here, something did occur 13,000,000,000 years ago, a nuclear reaction that created an illusion of the beginning of the universe. The hypothetical new knowledge successfully

identifies the illusion as an illusion. This illusion had previously been unknown. Just as the ancient Babylonian myth studied in Lesson 1 seem primitive to us today, future people might see our scientific understandings of the origins of the universe as primitive. Emphasize that despite this fact, we continue to contemplate the origins of the universe because as human beings we have a fundamental need to try and understand from whence we came.

Lesson 2

Student Handout 2.1—The Formations of the Universe

The Universe

Modern science suggests that the universe was created about 13 billion years ago. What existed before that moment? At present, we have no way of answering that question. Many astronomers would say that the query is meaningless because neither time nor space existed before the creation of the universe. There was nothing. Even so, there must have been at least the *possibility* of something, because in this Nothingness a sort of explosion occurred. Within a split second of that explosion, something did exist. The early universe was tiny and fantastically hot, a searing cloud of energy and matter, much hotter than the interior of the sun. For a trillionth of a second the universe expanded faster than the speed of light, until it was bigger than an entire galaxy. Then the rate of expansion began to slow, though expansion continues to the present day.

As the universe expanded, it cooled down. After about 300,000 years, it was cool enough so that protons and electrons could combine to form atoms of hydrogen and helium. These are the simplest atoms of all. After about 1 billion years, huge clouds of hydrogen and helium began to collapse in on themselves. As they did so, their centers got hotter and hotter. When they were hot enough, hydrogen atoms began to fuse together violently like vast hydrogen bombs. In this way, the first stars lit up. Hundreds of billions of stars appeared, gathered in hundreds of billions of clusters that we call "galaxies". In the stars, new elements were created, so that as stars lived and died they created new, and more complex types of matter.

Our Galaxy

Our attention now turns to one tiny part of the universe. Our sun and the planets that circle around it were created about 4.5 billion years ago. So they are about one third of the age of the universe. They were created about two thirds of the way from the center of a galaxy we call the "Milky Way". Look up at the heavens on a clear night, and the Milky Way looks like a pale creamy pathway through the stars.

Our sun is a star, and like all other stars, it was formed from the collapse of a huge cloud of gas and dust particles. Most of this material went to make up the sun, but wisps of matter orbited around it at various distances. Over time, the matter in each orbit was drawn together by gravity or by violent collisions into lumps of matter that eventually formed the planets. This is how our earth was formed. At first, it was extremely hot. The heavy metals within it melted and sank to the center of the earth. Lighter materials rose to the surface, and gases bubbled up to form the earliest atmosphere.

The Earth

The early earth was a violent place, bombarded by asteroids, and bubbling with heat from its interior. If you visited it, you would have seen landscapes full of volcanoes. But you would not have been able to breathe because its atmosphere contained no oxygen. Slowly, the

number of asteroid impacts diminished, the surface cooled, and, about 4 billion years ago, water vapor in the atmosphere condensed to form the first oceans.

Eventually, the earth's surface hardened and congealed, forming a number of thin plates that floated on the hot, molten material beneath. These plates slowly moved around the surface, and where they collided they formed huge mountain chains. Where they moved apart they created huge tears in the earth's surface (you can see one of these tears today in Africa's Rift Valley). Some of these huge valleys eventually filled up to form new oceans. This process, known to geologists as “plate tectonics,” means that the surface of the earth has changed continuously. As it changed so did the landscapes and weather patterns at the surface of the earth.

Early Life Forms

Life evolved in this ever-changing environment. The first living organisms probably evolved deep within the seas. Around volcanic vents deep beneath the surface, complex chemicals engaged in ever-changing reactions powered by the heat from volcanoes. These reactions led to the formation of complex chemicals that eventually created the first living organisms. Did life evolve only on our earth? At present, we don't know for sure, but it seems likely that life has evolved many times, wherever planets appeared that are similar to our earth.

The earliest living organisms consisted of single cells, as most living organisms do, even today. The earliest organisms probably fed off the chemicals leaking from deep-sea volcanoes. Their fossil remains can be identified today, and the oldest can be dated to about 3.5 billion years ago. Like all living organisms, these early single-celled creatures were subject to the laws of evolution. Minor changes in individuals were passed on from generation to generation, and those individuals that flourished best in particular environments multiplied most successfully, and left the most descendants. In this way, generation by generation, species gradually changed and diversified, and the number and variety of different species increased.

By as early as 3.5 billion years ago, some single-celled organisms began to derive energy directly from sunlight by using the chemical reaction known as photosynthesis. Since then, the sun's energy has been the main "battery" driving life on earth. Photosynthesizing organisms breathed in carbon dioxide and breathed out oxygen. So, as they multiplied, the amount of oxygen in the atmosphere increased. Living organisms were already shaping the earth's atmosphere. Eventually, more complicated cells appeared that could "breathe" oxygen. These are known as "eukaryotic" cells. From about 600 million years ago, organisms appeared that were made up of many individual eukaryotic cells. These were the first "multi-celled" organisms. Large, multi-celled organisms eventually colonized the land.

Source: World History for Us All, Big Era One, “This Big Era and the Three Essential Questions,” http://worldhistoryforusall.sdsu.edu/dev/eras/era1.htm

Lesson 2

Student Handout 2.2—The Chronology of the Universe Compressed into 13 Years

If the universe had begun 13 years ago, then, at this moment…

The Earth would have existed for about…5 years

Large organisms with many cells would have existed for about…7 months

The asteroids that killed off dinosaurs would have landed…3 weeks ago

Hominids would have existed for…3 days

Our own species, Homo sapiens would have existed for…53 minutes

Agricultural societies would have existed for…5 minutes

The entire recorded history of civilization would have existed for…3 minutes

Modern industrial societies would have existed for…6 seconds

The Internet, as we know it, would have existed less than…1 second

Source: David Christian, "World History in Context," *Journal of World History* 14 (Dec. 2003): 437-458.

Lesson 3
Knowledge, Myths and You

1. Dividing students into groups of three, ask them to complete the assignment on Student Handout 3.1 titled "Do You Believe." Reconvene the class and invite students to share their opinions. Lead a discussion in which students consider what types of information they would look for to determine whether or not they believe that a space ship from another planet had landed on Earth. During this discussion encourage students to support their statements with high-quality thinking.

2. Ask students to explain how the data that they said would either encourage them or discourage them in believing that a space ship from another planet had landed on Earth would compare to data that would either encourage or discourage them from believing in a creation myth or the Big Bang Theory. Students should recognize that as modern individuals we seek empirical evidence to support or discourage beliefs. Whereas we cannot always observe everything ourselves, we also rely on the empirical observations of others, whom we trust. Tell students that when historians analyze events from the past they must consider what types of evidence they will accept and what types of evidence they will not count as valid.

3. Prompt students to offer suggestions as to the meaning of the word, "theory." Through discussion lead students to the idea that a theory is an explanation of why something occurs in the way that it does occur, based on all of the available evidence. In groups of two or three, ask students to complete Student Handout 3.2 titled "My Theories." This worksheet asks students to identify four theories that are important in their lives. After students have completed this work, reconvene the class. Invite students to share a few answers. Help them understand that theories shape the ways that people think about their lives. For example, one cannot truly "know" that somebody else loves them. This is a theory. One cannot truly know that somebody else is trustworthy. This is also a theory. Just as individuals have theories, so do governments. The United States government, for example, is based on the theory that democracy is the most effective means of governance. Remind students that like the Big Bang Theory, the creation myths discussed earlier in this unit were theories as to how the world came to exist.

4. Suggest that not all theories are equal. The best theories are supported theories. Unlike individuals who tend to develop theories for their own personal lives, scientists try and develop theories that explain the world and phenomena in the world. Ask students what types of information scientists might use to support their theories. Encourage them to offer some suggestions. Then ask students to complete Student Handout 3.3, entitled "Supporting Theories," working in groups of two or three. After the groups have completed this work, reconvene the class and invite students to share their answers.

5. Remind students that in the creation myths they examined in the first two lessons of this unit, Earth and human beings were seen as the most important elements of the universe. Encourage them to ponder why this is so. Elicit from students why people would develop theories that give humans the central role. Help students understand that because people tend to see the

world from a personal perspective, it may be natural for them to place themselves at the center of their theories. In order to help students think about this type of mind set, ask students if they have ever viewed a situation from a personal perspective that caused them to misunderstand that situation. Ask them what the consequences were of viewing the situation from a strong personal perspective.

Lesson 3

Student Handout 3.1—Do You Believe?

Imagine that one of your classmates told you that a space ship from another planet had landed on Earth yesterday. Write down seven points of evidence that you would look for to determine whether or not you believed your classmate. Explain how each point would either prompt you to believe or not believe your classmate.

1.

2.

3.

4.

5.

6.

7.

Lesson 3

Student Handout 3.2—My Theories?

As you know, it is very difficult to know for certain that some things are true. Since people often do not know if things are true, they develop theories and simply assume that their theories are correct. This exercise asks you to identify three theories that are significant in your life. Please list each of these theories below.

Example: I will do well in school if I try my best. (Note: This is clearly a belief that if people try their best to do well in school, they will achieve at their potential. This is not, however, a fact.)

1.

2.

3.

Lesson 3

Student Handout 3.3—Supporting Theories

As you know, the highest quality theories are supported with the best evidence. When social scientists develop theories they use evidence from various discipline areas such as the sciences. In school, you study math, science, English/language arts, and social studies. Explain how learning each of these subject areas will provide you with insight for considering the validity of pre-existing theories and developing new theories.

Math:

Science:

English/Language Arts:

Social Studies:

Extension activity

Present the following scenario to students:

In recent years, educators have argued over whether or not schools should teach the Big Bang Theory or the Theory of Intelligent Design, which contends that a supernatural being, such as God, intelligently planned the creation of the earth and organic life on it. Some argue that both the Big Bang Theory and the Theory of Intelligent Design should be taught. Based upon everything that you have learned in this unit, take a position on this debate. Write a five point essay explaining your position. Be sure to relate your argument to the ideas discussed in this unit.

This unit and the Three Essential Questions

	Formulate a fundamental question about origins or processes in the natural or physical environment, and construct a non-scientific myth to answer that question. Explain your myth. (For example, develop a myth to explain why earthquakes occur or why certain kinds of trees have leaves in the summer but lose them in the winter.) What factors might make your myth convincing or believable?
	Discuss why creation stories are usually concerned with relationships between humans and supernatural beings. What attitudes and actions may characterize those relationships? (For example, what sort of relationship develops between God on the one hand and Adam and Eve on the other in Chapter 2 of the Book of Genesis in the Bible?
	Construct a poster, graphic illustration, or brief PowerPoint presentation that explains Darwin's theory of natural selection. Try to communicate this idea with few words or none at all.

This unit and the Seven Key Themes

This unit emphasizes:

Key Theme 5: Expressing Identity

Key Theme 6: Science, Technology, and the Environment

Key Theme 7: Spiritual Life and Moral Codes

This unit and the Standards in Historical Thinking

Historical Thinking Standard 1: Chronological Thinking

The student is able to (b) identify the temporal structure of a historical narrative or story: its beginning, middle, and end (the latter defined as the outcome of a particular beginning).

Historical Thinking Standard 2: Historical Comprehension

The student is able to (i) draw upon visual, literary, and musical sources including: (a) photographs, paintings, cartoons, and architectural drawings; (b) novels, poetry, and plays; and, (c) folk, popular and classical music, to clarify, illustrate, or elaborate upon information presented in the historical narrative.

Historical Thinking Standard 3: Historical Analysis and Interpretation

The student is able to (a) compare and contrast differing sets of ideas, values, personalities, behaviors, and institutions by identifying likenesses and differences.

Historical Thinking Standard 4: Historical Research Capabilities

The student is able to (d) identify the gaps in the available records and marshal contextual knowledge and perspectives of the time and place in order to elaborate imaginatively upon the evidence, fill in the gaps deductively, and construct a sound historical interpretation.

Historical Thinking Standard 5: Historical Issues-Analysis and Decision-Making

The student is able to (c) identify historical antecedents and differentiate from those that are inappropriate and irrelevant to contemporary issues.

Resources

Resources for Teachers

"Creation Myths." *Berkshire Encyclopedia of World History*. Great Barrington, MA: Berkshire Publishing Group, 2005. This short article on creation myths was authored by David Christian.

Dorson, Richard M., ed. *African Folklore*. Garden City, NY: Anchor, 1972.

Barrow, John D. *The Origin of the Universe.* New York: Basic Books, 1994. This book considers numerous speculative theories and myths relating to the origins of time, space, and matter.

Brockway, Robert W. *Myth from the Ice Age to Mickey Mouse*. Albany: State University of New York Press, 1993.

Christian, David. "World History in Context." *Journal of World History* 14 (Dec. 2003): 437-458. This essay "explores arguments suggesting that human societies and their evolution may be among the most complex objects available for scientific study. Such conclusions hint at the significance of world history beyond the history profession and also suggest the extraordinary difficulty of the challenges world historians face."

Christian, David. *Maps of Time.* Berkeley: University of California Press, 2004. This text presents world history on an unprecedented scale, stretching from the beginnings of time to present day. The author relies on knowledge gleaned from numerous disciplines to explain historical events.

Hawking, Stephen. *A Brief History of Time: The Updated and Expanded Tenth Anniversary Edition.* New York: Bantam, 1996. The author of this text, which considers the fundamental questions of science in laymen's terms, is considered one of the world's greatest theoretical physicists.

Sproul, Barbara. *Primal Myths: Creation Myths Around the World.* New York: Harper Collins, 1991. An anthology of creation myths.

Resources for Students

Encyclopedia Mythica. <http://www.pantheon.org/>

Exploring the Cosmos. Science@NASA: The Science Mission Directorate. <http://science.hq.nasa.gov/universe/>. This website explains NASA activities designed to study the origins of the universe.

Origins. Public Broadcasting System and WGBH Educational Foundation. <http://www.pbs.org/wgbh/nova/origins/>

Smithsonian, National Museum of Natural History. *The Dynamic Earth.* <http://www.mnh.si.edu/earth/main_frames.html>.

Stephen Hawking's Universe. Public Broadcasting System. <http://www.pbs.org/wnet/hawking/html/home.html>. This website has a collection of pages that consider the origins and structure of the universe. It includes interactive projects that many students will enjoy.

Correlations to national and state standards

Alaska: Content Standards, History

B:4. A student should understand historical themes through factual knowledge of time, places, ideas, institutions, cultures, people, and events: recognize the importance of time, ideas, institutions, people, places, cultures, and events in understanding large historical patterns.

California: Standards and Frameworks Earth Science

1: A-C. Astronomy and planetary exploration reveal the solar system's structure, scale, and change over time. As a basis for understanding this concept: *Students know* how the differences and similarities among the sun, the terrestrial planets, and the gas planets may have been established during the formation of the solar system. *Students know* the evidence from Earth and moon rocks indicates that the solar system was formed from a nebular cloud of dust and gas approximately 4.6 billion years ago. *Students know* the evidence from geological studies of Earth and other planets suggest that the early Earth was very different from Earth today.

Florida: Sunshine State Standards, Social Studies

1:2 The student understands historical chronology and the historical perspective, identifies and understands themes in history that cross scientific, economic, and cultural boundaries.

Indiana: Academic Standards for High School Science—Biology 1

B.1.33. Describe how life on Earth is thought to have begun as simple, one-celled organisms about 4 billion years ago. Note that during the first 2 billion years, only single-cell microorganisms existed, but once cells with nuclei developed about a billion years ago, increasingly complex multicellular organisms evolved.

Conceptual links to other teaching units

Landscape Teaching Unit 1.1 has shown us that on the cosmic scale of time human beings have appeared in the universe only recently. This unit has been about history before humans but also about ways in which humans have, since ancient times, explained the creation of the earth and the origins of human beings. Since our own species is the focus of World History for Us All, we now move on quickly to that period of the past when our distant ancestors appeared and began to evolve biologically. This story, nearly 7 million years long, is one that begins in Africa.