

MEGAstructures



From the Great Pyramid at Giza to the towering Burj Khalifa in Dubai, humans have been engineering massive constructions for thousands of years. Why do some cultures create mega-structures and others avoid them? How does the size of an empire affect the size of its structures? This episode examines the development of human societies through the lens of the largest and often most compelling structures we have created, including today's skyscrapers. Why do these structures inspire awe, and how has awe been an important driver throughout world history? Viewers will gain insights into these questions by learning about some of the world's tallest buildings and their transformation over time.

Curriculum Links

H2's *Big History* series is a great fit with a range of courses and units on history, science and technology, social studies and global studies. It is most appropriate for high school students but is suitable for middle school students as well. The series can be used as a companion to the Big History Project online course and curriculum. (Visit www.bighistoryproject.com to learn more.)

Identification Terms

The terms below are used in this episode; defining them will help students understand some of the concepts explored in this series. Using a dictionary or another resource, students can find definitions for these terms before or after watching the episode. As they are watching, students can also keep a list of terms from each episode in the *Big History* series to define.

awe
cosmos

exoskeleton
inert

ingenious
permeate

profound
progeny

threshold
trait

Discussion Questions

1. Why are so many early mega-structures in the shape of pyramids?
2. What is a costly signal? What is an example of a costly signal in our world today?
3. Why do you think the height of buildings has been valued throughout history?
4. Why is awe such a powerful emotion? How have leaders used mega-structures to enforce their power?
5. How does gravity affect the formation of mountains and the construction of tall structures?
6. What were some of the innovations in building design introduced during the Middle Ages?
7. What does the term collective learning mean, and why is it an important concept?
8. Why are creatures with internal skeletons able to grow larger? How does this concept relate to innovations in building construction?

Activities

- 1. Big History Concepts.** This episode explores several key Big History concepts including collective learning and thresholds of complexity. In an essay, define these two terms and give examples from this episode to explain the meanings of these concepts.
- 2. Bessemer Process.** The ability of humans to use steel for building construction was made much easier with the introduction of the Bessemer process. Research this innovation and create a visual presentation or a one-sheet describing the development of the process and its outcomes.
- 3. From Pyramid to Skyscraper.** We learn in this episode about the transformation of mega-structures, from the construction of pyramids to today's modern skyscrapers. Create drawings or basic blueprints of a pyramid and a skyscraper and compare and contrast their designs.
- 4. Building Up?** In today's world, tall buildings still figure prominently. But what kind of buildings do you think are most effective? Describe your ideal building and create a basic design. What materials would you use? What kind of spaces would your building include?

Reflections After Watching

What were the three most interesting things you learned from watching this episode of *Big History*?

Web Links

Infographic about pyramids:

www.history.com/interactives/history-of-pyramids

Background about iron and steel:

www.history.com/topics/iron-and-steel-industry

Big History Project:

www.bighistoryproject.com

Related Reading

NOTE: These books are recommended for educators and advanced student readers who may want to read selections from these books to further their understanding of the topics explored in this episode.

Box, Hal. *Think Like An Architect*. (University of Texas Press, 2007).

Lehner, Mark. *The Complete Pyramids: Solving the Ancient Mysteries*. (Thames and Hudson, 2008).

Misa, Thomas J. *A Nation of Steel: The Making of Modern America, 1865-1925*. (Johns Hopkins University Press, 1999).

