

***Timefulness: How Thinking Like a Geologist Can Help Save the World* by Marcia Bjornerud**  
**Discussion Questions**

1. Bjornerud defines chronophobia as “time denial, rooted in a very human combination of vanity and existential dread,” distinguishing between its visible (Young-Eartherism, creationism) and invisible (fiscal years, congressional terms) forms. What are some examples from your day-to-day life of encounters with visible and invisible chronophobia?
2. In chapter 1, A Call for Timefulness, Bjornerud introduces the idea that “rocks are not nouns but verbs —visible evidence of processes: a volcanic eruption, the accretion of a coral reef, the growth of a mountain belt.” How might changing our grammatical understanding of the planet’s geologic composition to fit this idea effect the way we relate to Earth and our place on it?
3. How did the groundbreaking geological theory of uniformitarianism introduced by James Hutton and championed by Charles Lyell pave the way for Charles Darwin’s *On the Origin of Species*?
4. In chapter 2, An Atlas of Time, Bjornerud details the long and complicated process to determine the age of the Earth at 4.55 billion  $\pm$  70 million years. What were some of the ways that geologists and physicists conflicted and ultimately collaborated to reach this number?
5. How did Marie Tharp’s remarkable quest to map the seafloor revolutionize the field of geochronology? What do you think kept the scientific community from acknowledging the significance of her work?
6. In Chapter 3, The Pace of the Earth, Bjornerud describes the Earth’s symphonic harmony of tectonics and erosion, and the accompanying ecological response. How do human beings fit into this natural cycle?
7. Were you surprised when Bjornerud introduced the idea that not all geologic change happens slowly? Did you share Hutton, Lyell, and Darwin’s belief that most geologic processes move at imperceptibly slow rates? Will you think about planetary change differently after reading this book?
8. In Chapter 4, Changes in the Air, Bjornerud writes that “the geologic past often acts as a screen onto which we project our deepest fears,” citing how the Cold War nuclear anxiety of the 1980s provided the cultural context for the popularization of the Alvarez meteorite impact hypothesis. Can you think of examples of this kind of projection in the current public conversation around climate change?

9. In the opening anecdote from Chapter 5, *Great Accelerations*, Bjornerud describes the epiphanic moment she accidentally shattered a watermelon-colored crystal in an abandoned mine in central Colorado. Can you think of a similar time in your life when you began to reckon with the impact that you, as a living person in the twenty-first century, have on the natural world?
10. In Chapter 6, *Timefulness, Utopian and Scientific*, Bjornerud outlines her vision for adopting Kurt Vonnegut's imagined Secretary of the Future position in the US Cabinet. What ideas do you have for introducing a more polytemporal worldview into government? And what consequences do you think this shift toward more timeful public policy could have?