

Time: A Precious Commodity; A Finite Resource

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It is an honor to be with you. I pray the Spirit may dwell with all of us.

Today I would like to share some thoughts about time. To illustrate some aspects of time, I wish to tell you about a few of my heroes—one from the Book of Mormon, one from the field of science, and one who is very personal. I, like you, have many heroes: the great coaches and teachers I have had, my PhD advisor, my colleagues, my brother and sister, my great parents, my sons, my sweetheart, and many, many others. These people have believed in me and have given me a chance. I will be forever in their debt, for they shared their time with me—and time is one of the most precious commodities of this life.

As a petroleum geologist, I am awed by the power of fossil fuels. Think of it: we can dump a little bit of gasoline in a tank, start up an engine, pile ten people (or undergraduates, as the case may be) into an 8,000-pound van, and drive up a mountainside at seventy miles per hour—simply by depressing a pedal a couple of inches. This alone would make fossil fuels a precious commodity, but in our modern hydrocarbon society, many of us also use them to heat our homes, cook our pancakes, and warm our morning showers. To all of us, fossil fuels are a precious commodity. Yet fossil fuels

are also a finite resource. It has taken Mother Nature millions of years to deposit, generate, migrate, and trap this precious commodity in the rocks buried deeply beneath Earth's surface. Yet it is estimated that, starting from the Industrial Revolution, it will take humankind only 300 years to deplete this finite resource—a blip on even the human-history timescale.¹ This then begs the following questions: What is my stewardship of this resource? and How will I use it?

Today for a few moments I would like us to consider these same questions relative to *our time* on Earth—this short mortal existence. Carl Sagan, the author and great spokesman for the television series *Cosmos*, used to browbeat us by telling us that we as humankind are arrogant to assume that there is not life beyond our planet, given the immensity of space and the universe. This concept was easy enough for LDS people to grasp; yet after a lifetime of study, Sagan found no solid evidence for extra-terrestrial life. In fact, in viewing our tiny blue planet from space, he said, "It underscores our responsibility to deal more kindly with one

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another and to preserve and cherish the only home we've ever known: the pale blue dot."²

Before his premature death due to myelodysplasia,³ Carl Sagan suggested that life on Earth is pretty precious and that we should take care of our planet. May I suggest that *time* on Earth is pretty precious. Maybe we should take better care of *it*. Indeed, just like fossil fuels, it is a precious commodity and a finite resource. The questions resurface: What is my stewardship over my time on Earth? and How will I use it?

As a geoscientist I have thought a lot about time. We geologists commonly throw around big numbers relative to time and the age of Earth. For example, with solid evidence geoscientists contend that Earth is approximately 4.7 billion years old—assuming time as we know it. Can we even comprehend what one billion years is? That is a very difficult task, so let's pare it down.

For several years my students and I have been engaged in studying a Jurassic-age formation in Utah's Colorado Plateau. The Entrada Sandstone has created the splendor of Arches National Park, Goblin Valley and Kodachrome Basin state parks, and other spectacular scenery in Utah. We have now determined that the Entrada Sandstone was deposited from approximately 162 to 165 million years ago,⁴ so the Entrada Sandstone has been around for at least 162 million years. This is only 3.4 percent of Earth history, but it is still a big number, so let's pare it down some more.

Milutin Milankovitch, one of my scientific heroes whom I will discuss later, determined that the elliptical path that Earth carves around the sun varies. At times it is more circular, and at other times it is more elliptical. This variation in the shape of the elliptical orbit has a distinct periodicity of approximately 100,000 years.⁵ This and other orbital variations affect the amount of incoming solar radiation and force Earth in and out of ice ages. When Earth goes into a cold glacial con-

dition, it stores ocean water on the continents as huge ice sheets. This process of building continental-scale ice sheets effectively lowers sea level by hundreds of feet. Therefore, Earth's oceans rise and fall at a precise periodicity of 100,000 years—a mere 0.0021 percent of Earth history. One hundred thousand—still too big of number to comprehend? Let's get closer to home.

Have you ever wondered why our campus is so flat when it is located literally a mile from the Wasatch Front, which quickly rises to 11,000 feet above sea level?⁶ It turns out that our campus was created when the Provo River deposited its sediment as a delta into a great freshwater lake called Lake Bonneville. Yes, just a mere 15,000 years ago,⁷ if you were sitting exactly where you are now, you would be under sixty feet of water watching fish and an occasional iceberg float over your head. As the climate changed during the past 15,000 years, due primarily to Milankovitch orbital variations, Lake Bonneville began to dry up and shrink, effectively concentrating her salt into what is now the Great Salt Lake. So our campus was created just 15,000 years ago. Its existence represents only 0.00032 percent of Earth history.

Let's go one more time with the analogy. The life expectancy of the average person in the United States is 78.49 years.⁸ So if you are average—and I know all of you are exceptional—you will be part of only 1.7×10^{-6} percent of Earth history. That's 0.0000017 percent. No, I am not trying to make you feel like a zero—but, in a relative perspective, life is short!

The scriptures teach us that our time (here on Earth) is not the same as God's time. To help me comprehend time, I think in terms of being sent to this earth life and being placed within an envelope of time. When this life is over, we are plucked out of that envelope and returned to Heavenly Father's realm—a place in which time as we know it does not exist. In this way

I can barely get my head around the eternal nature of God and man.

One of my heroes in the Book of Mormon is King Benjamin. In my mind he was a man's man, because he taught by example. He walked the walk. He was focused on a clear eternal perspective. He knew what he was about. And what was he about? He described himself in Mosiah 2:14: "And even I, myself, have labored with mine own hands that I might serve you." He taught that service to our fellow men is inseparable from service to God. He taught this principle by example. He used his time to serve others by teaching and leading through word and action. He also taught that this time in life is given to us from day to day and moment to moment:

I say unto you that if ye should serve him who has created you from the beginning, and is preserving you from day to day, by lending you breath, that ye may live and move and do according to your own will, and even supporting you from one moment to another—I say, if ye should serve him with all your whole souls yet ye would be unprofitable servants. [Mosiah 2:21]

The question returns: If my time is given to me from one moment to another, even from breath to breath, what will I do with it? King Benjamin chose to serve others.

A little more than a year ago a former graduate student, Shane Long, returned to campus to recruit geoscientists for his company. In a presentation that I had requested he give to our students, he shared an experience that had changed him. This story also had a profound impact on me.

Shane was on assignment for his company in Lagos, Nigeria, the eighth-most-populous country in the world and one in which there is much poverty. As he was driven in a bullet-proof vehicle from the airport to the meeting facility, people and children were abundant in the streets. Shane spent three and a half

hours in that vehicle, as progress was slow. During those hours he had time to observe and ponder what was around him just outside of the vehicle. At one point he observed two little girls in the dusty street. They were playing hand games. Shane's attention to them intensified because he recalled a similar experience he had had just a couple of weeks earlier. It was his own daughter who, while waiting to be picked up from her swimming lessons, was playing similar hand games with a friend. The circumstances of these two experiences, however, were vastly different, and, in Shane's words, "the contrast could not have been more striking." In those precious, quiet moments, clarity came to him. He received a vision, or personal revelation, that told him directly that, from that moment on, he was to be a steward over his salary. He fully internalized how he was a product of hard work, good people, and the blessings of circumstance. He was to be wiser and more caring with the gifts that were given him. In that poignant moment he resolved to change.

I have thought a lot about the experience of this great young man. I have thought about his willingness to share that experience with our present students. I have thought about the degree to which I serve others by sharing my gifts—my time being the most precious of them all. Am I doing my part? Am I serving my God by serving others to the extent that I should? Or do I waste a lot of the most precious gifts that are given me? When was the last poignant moment that I had wherein I resolved to change? Maybe it's about time.

President Marion G. Romney said:

Service is not something we endure on this earth so we can earn the right to live in the celestial kingdom. Service is the very fiber of which an exalted life in the celestial kingdom is made.⁹

Service, then, is the ultimate way of spending our time.

Let's examine a way in which another one of my heroes spent his time. Milutin Milankovitch was a Serbian mathematician. As a young man in the early 1900s he got caught up in the fervor of the possibility that Earth had experienced more than one ice age.¹⁰ Encouraged by the work of several predecessors, including Scotsman James Croll, Milankovitch realized that several variations in Earth's orbit around the sun affected the amount of incoming solar radiation that hit Earth. This variation in solar radiation, he reasoned, could throw Earth in and out of ice ages. The mathematical proofs, however, were difficult to develop. Indeed, it took thirty years of his life to finally produce and conclude these proofs and associated graphical curves.¹¹

Milankovitch died in 1958 at the age of seventy-nine at a time when most geologists had rejected his theory of the ice ages. Almost three decades after his death, with technological advances that were unheard of during his time, geoscientists finally proved that Milankovitch was right all along. Unfortunately, Milankovitch was long gone. Time had deprived him of the experience of knowing that his geological colleagues fully acknowledged the validity of his theory.

Milankovitch's theory has now been widely accepted and evidenced from a variety of disciplines. His calculations have been shown to be the driving mechanisms of the great ice ages of the geological past. They are now considered fundamental in understanding Earth's past climates. Furthermore, they have been extremely useful in petroleum exploration because as Earth stores vast quantities of ocean water on the continents in the form of massive continental ice sheets, global sea level drops. When Earth enters a warm interglacial period, the ice melts. That meltwater runs back to the ocean, and sea level rises again. This fluctuation in sea level is around 400 vertical feet. Therefore, the shorelines and great deltas of the world shift their locations

over 200 miles across the continental shelves from sea level's lowstand position during cold glacial maximums to its highstand position during warm interglacials. The great deltas of the world are prolific in producing accumulations of oil and natural gas. A knowledge of the driving mechanisms of these movements through time has greatly aided in the discovery of fossil fuels on the world's continental shelves. So, in a very broad sense, Milutin Milankovitch has affected each of our lives. Certainly the time he spent on his calculations has served mankind well.

On a more personal note, Milankovitch directly affected my life because as a graduate student at the University of Wisconsin, I studied Milankovitch cycles in the Arctic Ocean. Upon graduation I was fortunate enough to be given several offers of employment by oil companies while my colleagues, many of whom were brighter than I, struggled to get even one offer. I quickly realized that the multiple job offers were not a result of my sterling personality but were indeed a direct reflection of my knowledge of Milankovitch theory. Milankovitch helped me to secure my first real job, which has trickled down to other opportunities, including my present position here at BYU.

There is one more story about Milutin Milankovitch that gives him hero status in my life and directly addresses the topic of time. I stated that it took Milankovitch thirty years of his life to produce his mathematical proofs. Early in this process he was confident that his theory was correct. All he needed was time to make the necessary calculations. Then, to his dismay, World War I broke out. The invading army captured him and took him to a fortress. He spent the next six months in confinement as a prisoner of war.

Of the day he was put into prison, he later recalled:

The heavy iron door was closed behind me. The massive rusty lock gave a rumbling moan when the

key was turned. . . . I adjusted to my new situation by switching off my brain and staring apathetically into the air. After a while I happened to glance at my suitcase. . . . My brain began to function again. I jumped up, and opened the suitcase. . . . In it I had stored the papers on my cosmic problem. . . . I leafed through the writings, . . . pulled my faithful fountain pen out of my pocket, and began to write and count. . . . As I looked around my room after midnight, I needed some time before I realized where I was. The little room seemed like the nightquarters on my trip through the universe.¹²

Milankovitch was focused on his goals and his life purpose. He knew what he was about. He despaired only momentarily before awakening himself. He chose not to waste his time, so to speak. He turned his circumstance around and seemingly relished the six months he spent in confinement as a prisoner of war.

Brothers and sisters, do we relish our time on Earth? Do we have enough purpose in our lives to shake off despair and apathy? President Uchtdorf recently challenged us to prioritize all of the “good” things we do in order to do the best things we can.¹³ I have found that on occasion it is healthy for me to step back and contemplate what I really want to gain from this life and the precious time that I have. It often invigorates me and gives me more focus.

When I was recently discussing time as a precious commodity and a finite resource with one of my bright undergraduate students, the student blatantly stated, “Doc, we don’t have time to make mistakes in this life. It’s too short, and we lose the opportunity to accomplish something good.” How profound.

Please permit me to tell you about one last hero of mine—one who is very personal. This story also started with a moment of despair. In 1990 my wife and I were blessed with the birth of our third son, Connor. Within moments of his birth he was whisked away by the nurses for cleaning up and ordinary checkups. Soon thereafter, however, a solemn doctor returned

to my wife’s recovery room to inform us that our son had Down’s syndrome. As the words came out of his mouth, I vividly remember the deep despair that sank through my body. I felt ill and turned away from the doctor and prayed silently to Heavenly Father, asking Him to turn back time and to not let the doctor say those words. It didn’t happen; time went on.

Over the course of the next two days I was in deep despair, thinking of all the challenges that the future would hold. On the morning of that third day, I said a prayer asking Heavenly Father to deliver me from despair. I felt like I couldn’t go on, and I needed His help. That afternoon a good neighbor and friend came to visit. He took me aside and told me that our little boy needed a name and a blessing and then prodded me to go with him to the hospital and give him one. I agreed, and as we finished the blessing, I watched our little Connor in the incubator struggling for life. In that instant these words came to my mind: “One day at a time, Tom. One day at a time.”

The despair seemingly melted away. I had my answer. My little boy was fighting for life. I was surely going to give him my best—one day at a time. Since that moment I have never worried too much about the future with Connor. We’ve taken it one day at a time—moment by moment. Connor taught me to not be overwhelmed and fall into despair but instead to break life down into bite-size pieces, chew hard, and savor the moment.

For nearly twenty-two years our life’s ride with Connor has been awesome. I have often thought that all I have to do is provide him with a good life and then hang on to his coat-tails, for he will surely whisk me back to the celestial kingdom. He is a perfect example of unconditional love. He has been the glue to our family. He has made each of us a better person—especially his Papa Bear. And may I add that he is a great field assistant and a superb fishing partner! Connor seems to know what he is about. He wastes no time in sharing his

talents: smiles, hugs, and unconditional love to all he meets.

In Doctrine and Covenants 60:13 the Lord instructs his early missionaries to “not idle away thy time, neither shalt thou bury thy talent that it may not be known.” This instruction seems fitting as we soldier on through life, one day at a time.

My three heroes have provided great insight into the use of time. King Benjamin used his time to serve others and thereby his God by word and action. His many acts of service led to the strength of his words. He knew what he was about.

Milutin Milankovitch was also focused on his life’s work. He found little time to despair. He plowed forward, sometimes with delight, even under seemingly dire circumstances.

And, finally, Connor has taught me that life comes at us one day at a time. He taught me to not become overwhelmed with problems that might happen in the future but to instead use our gifts and talents from moment to moment and savor our precious time together.

Brothers and sisters, our life on Earth may be our best chance to prove our mettle. It comes at us one day at a time. What will we do in this life? this year? this day? this moment?

Heavenly Father and Jesus Christ have given us this time. They believe in us. They have given us all a chance. They are the real heroes. May we have the wisdom, purpose, and drive to know what we are about and to take advantage of our time here on Earth. May we reflect often and prioritize our time, for time is a precious commodity—a finite resource. In the name of Jesus Christ, the Prince of Peace, amen.

Notes

1. See Stephen Marshak, *Essentials of Geology*, 3rd ed. (New York: W. W. Norton and Company, 2009), 338–39.

2. Carl Sagan, “We Are Here: The Pale Blue Dot”; [www.youtube.com/](http://www.youtube.com/watch?v=2pfwY2TNehw)

[watch?v=2pfwY2TNehw](http://www.youtube.com/watch?v=2pfwY2TNehw); see also Carl Sagan, *The Pale Blue Dot: A Vision of the Human Future in Space* (New York: Ballantine, 1994), 7.

3. See Carl Sagan, Wikipedia; en.wikipedia.org/wiki/Carl_Sagan.

4. See Tyson L. Perkes and Thomas H. Morris, “Integrating Facies Analysis, Nonmarine Sequence Stratigraphy, and the First Detrital Zircon (U-PB) Ages of the Twist Gulch Formation, Utah, USA: Constraining Paleogeography and Chronostratigraphy,” *UGA Publication 40—Sevier Thrust Belt: Northern and Central Utah and Adjacent Areas* (2011), 176–77.

5. See John Imbrie and Katherine Palmer Imbrie, *Ice Ages: Solving the Mystery* (Short Hills, New Jersey: Enslow Publishers, 1979), 81, 83, 100.

6. See Provo Quadrangle, Utah—Utah County, 7.5 Minute Series (Topographic), United States Department of the Interior Geological Survey, 1975; photorevised from 1948 and 1969.

7. See Donald R. Currey, Genevieve Atwood, and Don R. Mabey, “Figure 4. Changing Size of Lake Bonneville and Great Salt Lake Through Time,” Map 73: Major Levels of Great Salt Lake and Lake Bonneville, Utah Geological and Mineral Survey, May 1983.

8. See “Life Expectancy at Birth,” People and Society, United States, The World Factbook; <https://www.cia.gov/library/publications/the-world-factbook/geos/us.html>.

9. Marion G. Romney, “The Celestial Nature of Self-Reliance,” *Ensign*, November 1982, 93; quoted in M. Russell Ballard, “The Greater Priesthood: Giving a Lifetime of Service in the Kingdom,” *Ensign*, September 1992, 73.

10. See Imbrie and Imbrie, *Ice Ages*, 97–100.

11. See Imbrie and Imbrie, *Ice Ages*, 100, 111.

12. Imbrie and Imbrie, *Ice Ages*, 102.

13. See Dieter F. Uchtdorf, “The Why of Priesthood Service,” *Ensign*, May 2012, 59–60.