

Deep Time and Spirit Time: One in the Same

Sermon by Robert M. Thorson

March 9, 2008, - Channing Memorial Church, Newport, RI

And now... some music (signal to Janet).

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SING: “Does anybody really know what time it is?”

SING: “Does anybody really care...about time?”

These two seemingly simple questions were lyrics from a #1 hit single by Chicago, a 1970's funk-rock musical group. At the time, I was playing tenor saxophone in a seven-piece band called the “Shades of Soul” that played quite a bit of their music. As you might have guessed, we were a “lighter shade of pale,” when it came to that kind of soul music, even with our **bell** bottoms, **ascots**, and large-collared “**body**” shirts.

The reply to the questions within the song were.... “No...we really **don't** know what time it is..... No...we really **don't** careand No...we really **can't** imagine why anyone **would** care.

Well...I **do** care.

You see...I'm in the time **business**.

I don't repair clocks. I don't schedule events. I don't time races.

Rather, I'm a geology professor. A time-traveler so steeped in time, that I'm hardly ever late for class.

I remember starting one of my lectures with that tune by Chicago.

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SING: "Does anybody really know what time it is?"

SING: "Does anybody really care...about time?"

Then I told my students that they had **better** care about time, or they might **fail** the final exam.

- The predictable decay of radioactive isotopes – for example rubidium to strontium ...or potassium to argon -- allows them to **date** ancient events. They will need this tool if they are to be geologists.
- The Eons, Eras, Periods Epochs, and Ages comprise the **calendar** for Earthly affairs. They will need this hierarchy in order to talk with other geo-historians.
- The duration of geologic time is important for them to wrap their brains around: otherwise, it's hard to understand organic evolution.

- But most importantly, I tell my students that they will need to differentiate...then re-combine...**four kinds of time** in order to understand how the earth actually works.
 - **Arrow time** is manifest in the grand sweep of planetary history, billions of years in the making.
 - **Cycle time** is manifest in the rise and fall of the sea and the coming and going of ice ages.
 - **One time** is manifest by things that happen only once, like the asteroid impact that finished off the dinosaurs.
 - **All time** is manifest by things that never change, like the spectral colors of the rainbow.

By the end of the semester, they have come to understand that time is to **geologists** what space is to **astronomers**.

A month ago during one of our post-church discussions, several people mentioned the book and PBS documentary “Cosmos” by Carl Sagan. This astronomer shared with his readers the spiritual significance that emerges spontaneously from a secular study of astronomy with its... “billions and billions” of stars. We geologists draw spiritual significance from the equally secular study of “billions of billions of years” of earth history, 4.55 +/- 0.04 Giga-years to be exact.

For those of you who may have forgotten this “greatest story ever told,” here’s a condensed version.

Earth arose from cosmic chaos. Light, day, and night, came from the void of nothingness. Hell was not a place, but a time... a broiling hot Eon when earth was a slushy parfait of molten rock, glazed with a hardening sauce of red-hot lava. Then came clearing skies, the greatest flood of all time, and the leap from autocatalytic chemistry to microbial life in what was then a universal ocean. Clots of dry land were smelted out of the primitive dark crust by volcanic processes. They drifted about the globe like great barges, which then docked to become continents, which later collided with each other to make mountain ranges long since erased by the greatest leveler of all...deep time.

Seas came and went. The primordial ooze fermented, respired and photosynthesized to create a climate thermostat preventing our lovely blue planet from suffering the scalding suffocating path of Venus, or the frigid, dusty path of Mars. Life on earth remained simple and salty until the last ninth of earth history, when an astonishing phalanx of plants and animals marched up from the sea to experience the opportunities and costs of living on dry land.

Forests filled with screaming, singing, chirping, growling, hissing, roaring, barking and bellowing sounds: insects, dinosaurs, birds, snakes, primitive mammals, primates, apes, hominids. Ice ages came and went. Human consciousness sparked. Civilization erupted. Mechanical engines rendered

us into powerful geological agents. But some day, Earth will again be consumed by fire... as it was in the beginning.

Embedded within this geo-narrative are the **four kinds of time**.

Arrow time is in the unidirectional unfolding...the “gathering of the crust” into continents...and the “phalanx of plants and animals marching up from the sea.”

Cycle time is in the rise and fall of the seas...the origin and extinction of new species and the “comings and goings of ice sheets.”

One time is in the “slushy parfait” ...the origin of life...the origin of photosynthesis, the first animal... first *Homo sapiens* looking up into the heavens and asking “why?”

All time is in the relentless forces of gravity, radiation, and atomic chemistry that run the whole show.

Never in a science class do I get a chance to ruminate about time spiritually, especially at a public university. But here, there are no taxpayer dollars flowing into my wallet. Here, I’m a volunteer, as is Pat Fairchild and others who worked hard to bring you today’s service. Here, most of you will not fall asleep...not be distracted by taking notes... and not text-message each other during my talk.

So....thanks for giving me the opportunity to share my thoughts with you....

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SING: “Does anybody really know what time it is?”

Yes. We’re within the..._____ minute ...of the tenth hour ...of the 9th of March ...of the Winter of 2008... of the 21st centurywithin the Common Era...of the Holocene Epoch ...of the Quaternary Period... of... the Cenozoic Era ...of the Phanerozoic Eon.

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SING: “Does anybody really care...about time?”

Yes.

We care about **Arrow Time**: Just as surely as Earth history flies from Alpha to Omega... our lives fly from birth to death. All change, all growth, all progress, all evolution...whether for planets or for people ...takes place in this kind of time.

Spiritually, the straightness of time’s arrow gives us direction and purpose. Goals lie toward the tip of the shaft. Regrets lie toward the fletching. For many people, arrow time follows the narrative Old Testament..., Genesis, the Books of Moses, the Books of History... the patriarchs, the flood, the Exodus, the promised land, and the line of kings in the House of David and a carpenter from Nazareth.

For those of us at Channing Memorial Church, however, arrow time is about the from Newport named William Ellery ...the denomination he founded...the congregation gathered in his name...the granite steeple built in his honor, the series of ministers, and Dennis Greene's property committee that plans to keep our steeple standing higher than all the others.

The length of time's arrow gives me spiritual comfort. "No vestige of a beginning...no prospect of an end." Those are the words of a Scottish gentleman named James Hutton, the so-called father of geology...spoken at a time when Newport had recently been burned by the British. Coming to terms with the enormity of this span of time liberates us from the folly of believing the earth was created so that we humans could live upon it.

Mark Twain understood this when quipped that the duration of earth history is to human history as the height of the Eiffel tower in Paris is to the thickness of paint on the knob at its top. He wrote this during the Gilded Age, when Newport cottages were in season.

During the 20th century, at about the time Amy Freedman was being born, the writer John McPhee dubbed this enormous sweep "Deep time," a phrase that captures the emotional depth of what might otherwise be considered a tally of geological ages. Indeed, each of our lives is to the whole thing as a single grain of sand is to the beach.

Our building embraces us with deep time. Its lovely dusky rose-colored granite is about half a billion years old, 50 million times older than I. For a

moment, let's assume that our church has about 5,000 blocks of rock. If so then each of those blocks could hold 50 thousand of our lifetimes. All of our lifetimes summed together would fit into a piece of one block no bigger than a single crystal. Each of our individual lives is to the true age of the physical church as the tiniest speck is to the whole volume. At such a scale, we are practically atomic.

The absence of plot for the time's arrow is also comforting. Earth history is not about the unveiling of some grand plan, but about unique and vibrant adaptations to unexpected singularities. This is spiritually exciting. It's better to have human lives filled with unexpected singularities, than to have them be succession of souls queuing up to play their pre-ordained roles.

We care about **Cycle Time**: Your heart beats in your chest. Your breath moves in and out... in and out, in and out...time and time again...time and time again...time and time again. There is no sense of direction. Instead, there is a pulse, a rhythm, a series of events that always circle back on themselves. Each day is a new day. Tides rise and fall. Rivers flood and ebb. Climates warm and cool. Mountains come and go. Super-continents gather and disperse.

The embedding of cycles within cycles within cycles is comforting. It helps me realize that even my longest, slowest slog towards some goal is really but a single moment embedded within the grander scheme of things. If being

fully alive is to live in the present moment, then knowing about earth's longer cycles can help keep us "in the moment," all the time.

Cycle time replenishes. We rise energized by sleep, pass the day, go to bed, and then rise replenished once again. Spring comes, replenishing the earth after the dark days of winter, year after year. The tilt of the earth's orbit changes, replenishing us with warmth after glacial cold.

Ashes to ashes, dust to dust. In cycle time there is rest for the weary. In cycle time there is peace after war.

We care about **One Time**: Reflect on those life-changing events...your biological conception ... that terrible accident...that fork in the road ...that love at first sight... that unexpected luck...that moment of reckoning... that life-changing invention ...that man named Caesar crossing the Rubicon...that dawn of human consciousness ...that origin of life ...that universal flood...that fiery beginning, that coming together "out of chaos and old night," as Thoreau once said. Such singularities change the course of history forever ...yet stand apart from it. They never return. They stand alone.

The Second Gospel of Peter, Chapter 2 reads ..."The day of our lord will come as a thief in the night...the heavens shall pass away with a great noise, and the elements shall melt with fervent heat." This will happen, perhaps a billion years from now. What then?

Spiritually, One Time is called fate, with a lower case F. It gives interesting tension to our lives. It keeps us on our spiritual toes.

Fate is what gives us our individuality, our hope, our fear, our humility. Consider a “Golden Anniversary” celebration. Fate brought the happy couple together. How easy it is to forget that fate kept them together as well. To know that we are only partially in control of our lives is liberating.

We care about **All Time**, the kind of time called “everlasting” by the prophets... possessed “before the works of old,” before the “mountains were settled,” before “foundations of the earth” were laid, before the seas were compassed, before the “highest part of the dust of the world,” was made.

Gravity is patient. Salt will always be salt. The sky will always be blue on a sunny day...gray on a rainy one. The dualities of joy and suffering, good and evil will always be with us. There will always be order in the universe.

All time gives us harmony. At the elemental level, each of us has been vibrating for 13.7 billion years old. Every cell in your body is made of nothing more, and nothing less, than the residues of stars that ...gathered as dust, ignited in stellar fusion, and blew up as supernovae long before our planet came into being. At least one of the vibrating calcium atoms in your

“This was the Earth of which we have heard, made out of Chaos and Old Night.”

Henry David Thoreau, 1864, *The Maine Woods*

Time and Spirit: Ruminations of a scientist, pondering planet Earth.

Robert Thorson shares with us the four kinds of time that have shaped Earth over billions of years, and each of our lives at the century scale. The *arrow time* of history, the *cycle time* of rhythm, the *one time* of specific moments, and the *all time* of the eternal ...are useful conceptual tools for both secular science and spiritual awareness. As a professor, he will use this notion to explain how earth and life and you and I came to be.