

Three Readings

From the book of Genesis, interpreted by M.Bryant

In the beginning, before the heavens and earth all was a formless void, in darkness

The divine created light, and there existed division betwixt the light and the darkness. And this was good.

And from the division betwixt the light and darkness came the evening and morning and awareness of time – the first day. And this was good.

And the divine created more divisions – betwixt the sky and sea - betwixt the sea and land, betwixt the sun and moon. And this was good.

And the divine separated out the plants of the earth, and the stars of the night sky, the animals of the land and sea, and the birds of the air. And these were created in not only many divisions – but each creature, plant, and star appeared unique from the others. And this was good.

And the divine then differentiated human beings, divided female and male, and each of these was also unique among the others, but made in the image of the divine – the defining unity. And this was good.

And then the divine entrusted all of creation with itself – “Be fruitful and multiply” she said, expecting more differentiation, and she gave stewardship of the land and plants and animals to the human beings. And the people began the naming of things. And then the divine rested, returning to the stillness and darkness, contemplating what she had done.

And this was good.

from John A. Wheeler, famed 20th Century Astrophysicist:

The Universe had to have a way to come into being out of nothingness... When we say "out of nothingness" we do not mean out of the vacuum of physics. The vacuum is loaded with geometrical structure and vacuum fluctuations and virtual pairs of particles. The Universe is already in existence when we have such a vacuum. No, when we speak of nothingness, we mean nothingness: neither structure nor law nor plan. For producing everything out of nothing our principle is enough.

and from Ellen DeGeneres:

In the beginning there was nothing. God said, 'Let there be light!' And there was light. There was still nothing, but you could see it a whole lot better.

After Midnight

*A sermon for Unitarian Universalist Congregations by Martin Bryant
Given Jan 2, 2005 at Wildflower Church – UU, Austin Texas*

We're celebrating a new year, - that we've agreed culturally that yesterday is the start of a new annual cycle. Although the 365 and a quarter day year is implied by the rotation of the Earth and its orbit around the sun – the day that we pick to increment this cycle is somewhat arbitrary. Although our calendar and clock are essentially Roman – as we discussed earlier many of the same astronomical phenomenon were used all over the world to construct calendars and clocks and the Romans derived much from the Babylonians, Greeks, and Egyptians and we've adapted our calendar several times over the millennia for accuracy.

We can agree that based on observation of some natural phenomenon we've achieved some widely accepted conventions about measuring time – but what about time itself? Walt Whitman in "Leaves of Grass" wrote "the clock indicates the moment – but what does eternity indicate?" Could our linear / two-dimensional / narrative understanding of time – be every bit the convention – the construct - that the calendar is?

The amazingly brilliant, but significantly wrong Aristotle believed that the laws of physics existed in an eternal world of absolute reference of space and time. That we could think of space as an "ether" of X,Y,&Z coordinates and that when we became able to measure it accurately we would be able to place objects accurately in this grid. And time? Time was just as absolute, and accurate measurement would reveal absolute certainty. And the Greek master asserted that time was eternal – with no beginning and no end. Aristotle's assertions were made from pure reasoning – without confirmation by applied physics. In fact, early applied physicists like Archimedes and Galileo discovered things that gave them reasons to question some of the master's assertions.

But among the learned at least, Aristotle's views reigned for millennia and they were still very much in force in 1687 when in his Principia Mathematica, the equally brilliant and equally significantly wrong Isaac Newton seemed to take Aristotle's view, correct a few minor flaws and prove them as facts with pure mathematics. Although Newton still believed in an ether and absolute time, one difference that Newton asserted was that there was no absolute motion in space. Position in space was relative.

From the perspective of Newton's laws one could not distinguish between one object apparently at rest and the other in apparent motion – only that they were in relative motion.

By example, one could say that the earth was at rest and a train on it was moving North at ninety miles per hour or that the train was at rest and the Earth was moving south underneath it at ninety miles per hour. There is no mathematical difference which reveals whether the train or the earth is moving! And there is no observed difference – standing on the train – the earth seems to rush by – standing on the earth – the train rushes by... And of course the physics in play are identical for a ping-pong game played on the train, on the earth off of the train, and – given similar gravitational effects, in abstract space off the rotating and orbiting earth.

Both Aristotle and Newton believed in absolute time – that is, they believed that one could unambiguously measure the interval of time between two events, and that this measurement would be the same whoever measured provided they had a good enough clock. But just as Galileo and others found problems with Aristotle's theories – so for the next several hundred years, applied physicists found problems with Newton's.

In 1905, a clerk in the Swiss patent office, the equally brilliant and maybe not quite as wrong Albert Einstein asserted that perhaps the problems with Newton's theories were due to the assumption of absolute time. If objects could be in relative motion, why would they not be in relative time? In Shakespeare's words from "As You Like It" – "I pray you, what is the clock? time travels in divers paces with divers persons". Einstein's idea was that time, matter, and energy had a relationship that could "warp" four dimensional space time.

Einstein asserted – that contrary to Newton's theories – objects like the Earth are not made to move on curved orbits by a force called gravity, instead they follow the nearest thing to a straight path in a curved four dimensional space time. The earth does not rotate around the sun due to the sun's pull of gravity, rather the earth travels in a straight line to itself in a space time continuum which is warped by the mysterious gravity of the sun to seem curved, even circular.

If this seems hard to swallow – think about those conical quarter eating charitable fund raising things you sometimes find in malls. If you roll a coin out on this thing – your donation spins around and around, faster and faster, until it goes spinning, not falling, down the

pipe. Now if you looked at this from directly above – and could only see a disk with a hole in it – you would be mystified with this behavior – but in seeing the descending cone below – you can understand it. Such it is with four (or more) dimensional space time and gravity.

This “warping” allows for gravity to warp time as well. By example, let’s take triplets born at the same time, all three given extremely accurate watches at birth. One lives her entire life at sea level; the second lives her life on the top of a mountain. They both live seventy years - exactly the same amount of time by their watches. However, if someone could “see” both of these twins – light sent from one to the other at the time of their deaths... - the mountain dweller – would die apparently almost 8 seconds later than the coastal dweller – even though they had the same time on their watches. The third twin – who became an astronaut in early adulthood and has lived since in space – could be contacted by light-speed message and find out about the death of her sisters at the age of 42 – according to her experience and watch.

During his lifetime, Newton became troubled by the direction his “laws of motion” took the next generation of physicists and thinkers. Newton, a devout Christian who believed in a unique creation, witnessed others take his theories as the springboard of the “Age of Reason” which would cast serious doubt in the minds of many intelligencia concerning the validity of his faith and support a return to Aristotle’s concept of an eternal universe, bound by fixed laws of physics. Similarly, Einstein, a proponent of this view, became concerned when his followers used his theories to essentially prove – “the big bang” – a concept he found philosophically troubling.

The pope didn’t find it so troubling – the Pope has given Steven Hawking among others a special commendation for their work establishing the big bang.

Einstein’s followers took his principles and envisioned a “cone of events” – that for each event in space-time, each “here and now” there exists a cone into the future of all possible next events. This cone is defined by the speed of light – the only absolute time we think we can be sure of in the universe. This cone of future events implies a cone of possible past events - all possible events that could have led in physics to this one.

Now we could say another generation of physicists and thinkers rule the day. A generation led by Stephen Hawking, similarly brilliant and perhaps a little less wrong. These thinkers were "raised" as scientists in the "post big bang era" – with the big bang as an assumption. And they have similarly had some time to reflect on Einstein's view of time. As Hawking has said "there is no principle of physics which does not work equally well going forwards or backwards in time. In fact one might say time is irrelevant to much of physics and may be a phenomenon of the observer."

Because of their belief in the "big bang" many of these current day physicists see each cone of past events originating with the "big bang" – the original expansion of the universe – and many see each cone of future events ending in the future with the "big crunch" when all time and things will collapse again into a singular nothingness. Hawking, among others, however has proposed that the unique point of the intersection of the cone, which is, of course every point of space-time – every event – is actually capable of affecting both cones. That the because the direction of time is irrelevant to the laws of physics events in the past may be effected as well as events in the future in they call "forwards and backwards chaining".

Hawking suggests that we may be able to actually change the past – and he suggests that changing the past may be as easy and as frightening as thinking it changed so.

This is already inspiring the next generation of physicists to find new beliefs, and not surprisingly, return to some old ones. The newest proposals say that each space-time event – each "now" if you will – exists at a maintained equilibrium between the "big bang" and the "big crunch". That time does flow from "big bang" to "big crunch" but that it does also not flow – that we experience a now – "stuck" in the middle between them – as if the cones were folded back on themselves into a sphere. This concept seems to re-introduce the idea of an eternal universe subject to constant laws – both static and dynamic.

For the last century – there has been a great schism in physics – not a conflict – but a sort of estrangement. Astrophysicists – who study the stars and the very large – have been working out details of relativity and working on gravity and light and implications of that. Particle physicists – who study the sub-atomic world of the very small – have been working on quantum mechanics and implications of that.

Einstein's dream was that he, or one of his successors would find a unified field theory – a theory that could reconcile these two disciplines. Today "string theory", which has one of its major proponents here at U.T.-Austin in Prof. Steven Weinberg, seems promising to reconcile at least three of the four major theories. String theory describes a universe made up of identical objects of energy – called "strings" which vibrate or resonate differently. This seems to me to invoke a kind of "music of the spheres" view of the world. But could a unified field theory do more than reconcile physics? Could it reconcile us to our souls?

If a lot of this seems rather befuddling, take heart – the great particle physicist, Niels Bohr – who, when knighted for his work in Denmark set the Taoist Yin/Yang in his crest – said ***We must be clear that, when it comes to atoms, language can be used only as poetry.***

I feel the same way about religion.

Where will all of this lead our thinking? Will we come to find that our concept of time – that there is a sequential, narrative flow of measurable events is some kind of even more ancient convention – a brain wiring or firmware that is human but no more "real" than our calendar or clock? Is it actually a barrier to a more subtle understanding of reality? Will we be drawn to feel all this reality is all illusion and only the observer matters – to existentialist nihilism? Or rather, will this lead us to reconcile science and religion – our reasoning and spiritual insight?

Some of you may know that I am a sort of duffer student of the ancient texts – the Tao-te-Ching, the Bhagavad Gita, the Psalms and Genesis, Heraclitus and Socrates. These ancient visionaries described a world full of contradiction – both one and many – eternal and temporal. Both timeless and flowing. With all things originating in nothingness and returning to unified nothingness. I believe the Tao-te-Ching clearly embraces these contradictions. Perhaps it is this observer – but with each new discovery and assertion in physics, we seem to be drawn closer to the world described by these most ancient of views.

The great spiritual psychotherapist Carl Jung wrote:

We can never finally know. I simply believe that some part of the human Self or Soul is not subject to the laws of space and time.

"Time" and "Being" or identity have always been the main "frames" of our reality. That we are unique entities moving through a linear

sequence of events is the foundation of much of our thought, culture, and "truth".

But perhaps we are not as "alone" in being "us" as we might think. The boundary between our self and others, between our self and everything else may be mostly a construct. At the sub-atomic level there is no clear distinction between that which is you and not-you at the "border" of your epidermal skin and the atmosphere. For me, as a neo-Taoist, we are undeniably not separate, but part of the unity. I have always suspected that this is the case, even before my exploration of the Tao confirmed it for me.

And like Carl Jung, I have also suspected that our fundamental view of time may also be such a construct. Not surprisingly to me, this seems to be both deep rooted in Taoist and Buddhist teachings and revealed in modern physics.

From the Tao-te-Ching #45 (my own interpretation)

The great perfection seems simple

- but it is infinite and eternal

The great source seems empty

- yet it is inexhaustible

The great truth seems contradictory

- yet it is all there is.

The still, clear pond

reflects the heavens

and reveals the depths.

Why would these visionaries – living over two millennia ago see something we are now only beginning to understand? Julian Jaynes, a Princeton psycho-scientist studies the origins of consciousness and believes that humans were not entirely conscious – that is "in our own minds" or "in our right minds" until recorded history – around 200 BC. Before that time, they went through an evolution leading to the separation of conscious mind from the unconscious – bicameralism. Now although we may associate this kind of unconsciousness with the minds of beasts, before consciousness – it is possible we were more aware of subtle reality – meta reality if you will than they are now...

Very perceptive, wise individuals who lived two and a half millennia ago – may have had minds that could better perceive some things than we do. Their brains had not yet evolved in a way that "focused" their perceptions in a manner that although it has contributed to our "success" and survival, may hide significant clues about the nature of

the universe from us. I don't know that this is true –but it is interesting...

But these ancient teachings and maybe new discoveries these not only give us some insight into the nature of time, but also some counsel as to how to deal with the somewhat mind-blowing nature of it: The only moment that matters is this moment and all eternity is here in this moment. We, the unity, act in this moment to create ourselves and through ourselves create all of reality – it is the only thing we can do.

The late famed astronomer, Carl Sagan, in his book the Dragons of Eden, proposed an interesting way to look at the calendar. He suggests – what if we said the “year’s” calendar began with the big bang and then came forward to now? I happen to have a Sagan calendar here – so we can take a look.

- Now here – on Jan 1st is the big bang. – things start really expanding...
- Now that seems to have taken a lot out of the universe – we finally recover from our hangover - we have a notable event – all the way over here on about May 1st – May Day – with the origin of the Milky Way galaxy.
- That was a lot of work too, so creation is now on Summer Vacation
- We check back in after Labor Day or so – and here on September 9th – is the origin of our Solar System
- Less than a week later – September 14th – the formation of the Earth – the Earth’s Birthday!
- And a little more than a week after that – September 24th (on my birthday) – the origin of life on Earth - I can't think of anyone I'd rather share a birthday with, frankly.
- Just about a week later – October 2nd – is the formation of the oldest rocks we of know of
- and a week after that – on October 9th – the oldest fossils we know of
- on November 1st – here’s a big day – on this day in the Sagan year – some micro-organisms in their evolutionary way – invented sex
- and within two weeks on November 12th – plants invented photosynthesis-
- by December 1st the Earth had a significant oxygen atmosphere (I hope we can keep it...)
- As the holidays approach – things start hopping – or at least crawling- on December 16th – we have the first worms – and they are still around today

- within a couple of days the earth develops plankton, trilobites, and finally by December 19th – vertebrate animals and fish
- On December 20th – we get the first vascular plants and plant life moves ashore
- The very next day – animals – mostly insects follow the plants on dry land
- The day after that – December 22nd we had flying insects and amphibious animals
- And the day after that on Dec 23rd – the first trees and the first reptiles
- On Christmas Eve – just in time for Christmas – dinosaurs!
- Christmas day is fairly uneventful – must be a day off for the universe too
- On the next day – Boxing Day – mammals appear
- the next day – December 27th – a couple of days late for the pear tree – birds appear
- the following day – they lasted four days – the dinosaurs become extinct – and flowers appear for the first time to mark their passing
- and the very next day – Dec 29th – Do you ever have relatives show up just after Christmas? Primates appear on the Earth!
- Now I'm guessing that we have some real interest in New Year's Eve – but let's not get started too early - at 1:30 in the afternoon on Dec. 31st– we have Ramapithecus – the earliest known ancestor of humans
- things bump along until 10:30 pm - and at that time – the best party animals of all - humans show up for our New Year's bash
- by 11:00 pm – we are using stone tools
- at 11:46 – we are using – fire – very handy for fireworks and sterno cans for party dip (though those won't be invented for awhile yet)
- by 11:59 – we notice people are painting on cave walls in Europe – does this ever happen at your parties – where people draw on the walls?
- 11:59 and twenty seconds – agriculture is invented, followed by cities a while later (which we'll need so we can have Times Square)
- 11:59 and fifty seconds – ten seconds to go – we have the invention of astronomy
- nine seconds – invention of the alphabet
- eight seconds – invention of law – near Baghdad
- seven seconds – invention of the compass – and hiding soldiers in giant fake horses
- six - invention of iron metallurgy
- five – Buddha joins the party
- four – Jesus drops by too – along with the invention of geometry and physics
- three seconds to go – zero and decimals are invented

- two – the crusades and the dark ages (I guess the lights go out...)
- one – voyages of discovery – experimental method of science, Unitarianism
- Happy Sagan New Year!

So, at least on the Sagan Calendar:

- all of human prehistory is an 11th hour affair
- and all of human history could be described as “last minute”

All of the current era has taken less time than a sloppy champagne tasting kiss... and all of our lives are the blink of an eye – a flash of sparkling confetti - at least relative to the history of the universe.

Now Carl Sagan setting the start, Jan 1st of the calendar to the big bang is an interesting idea. But what if we consider the Sagan Year’s interesting proposal for the other end of the calendar – that yesterday – is the beginning of something new – not just a new year – but the turning point of all of creation – the moment at which the universe renews itself. Just imagine that with that new day all things become possible, past and future.

And since, well we didn’t really have time to prepare for yesterday in that amazing context and well, one day is hardly noticeable in the history of the universe – why don’t we just imagine that moment – that epochal turn in reality – when creation is fresh is this moment right now, or maybe this one, or maybe...
the secret is that we don’t have to imagine it – it’s true.

Spirit Seeds

Words: Mary K. Isaacs

***Sing to music by A.H. Hoofman von Fallerleben's Schleische
Volkslieder (1842) #42 in Singing the Living Tradition***

Humans are spirit seeds,
Each filled with all it needs,
In humble trappings an awesome power.
Our fate like seed of earth,
Waiting to spring to birth,
And 'though minute, to claim its hour.

Each moment ages holds,
All life within each soul,
Each tiny atom a universe.
This moment all we own,
Choice shapes our living stone,
As simple words make noble verse.